HOME COMPUTING WEEKLY
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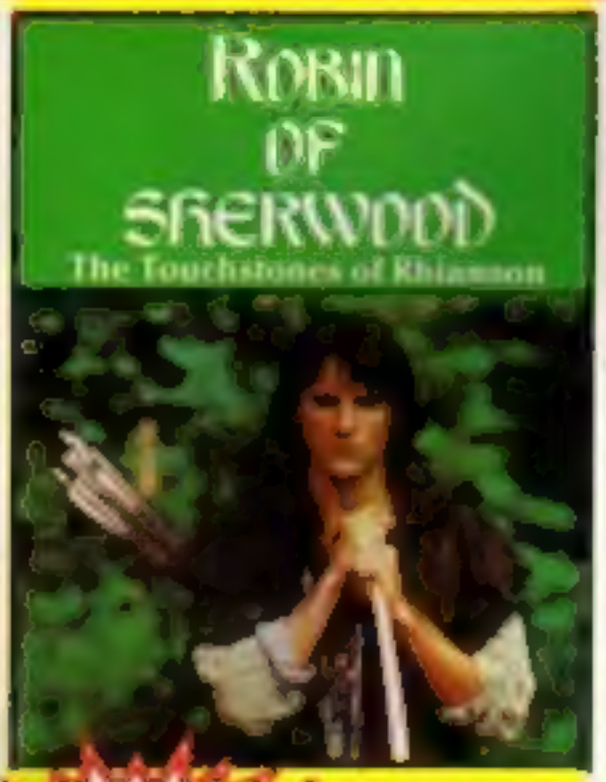

Win in our 100 prize competition from Adventure INTERNATIONAL

Reviewed inside

plus five pages of software reviews

Blockbusters bargain bundle

Four chart topping games are being brought together on a compilation entitled "They Sold a Million".

The games are: Beach Head (US Gold), Daley Thomson's Decathlon (Ocean), Jet Set Willy (Software Projects) and Atik Atak (Ultimate).

The package will be marketed under the label "Hitsville" and will be available for Spectrum, Amstrad and C64 retailing at £9.95 or £12.95 on disk.

The C64 version will feature Staff of Karnath in place of Atik Atak. "They Sold a Million", so called because combined sales of the four titles have topped the million mark, will be of special interest to Amstrad users as Jet Set Willy and Atik Atak have been converted specifically for this compilation.

The four software houses involved see the project as a breakthrough in co-operation between companies. Ocean's David Ward said: "The software producers have worked together to give the public a really good deal for Christmas – the industry is often portrayed as 'backstabbing' and this proves we are capable of working in harmony."

"They Sold a Million" will be marketed in a boxed twin-cassette case with one game per side so that each of the quartet of titles can be easily found and loaded.

For the linguistically inclined the packaging will be in English, French, Spanish and German in anticipation of European sales.

U.S. Gold's Geoff Brown said: "We are expecting to achieve substantial sales throughout Europe."

"They Sold a Million" will be released in the first week of November.

● U.S. Gold have their own compilation on the way called "The Arcade Hall of Fame", featuring Spyhunter, Tapper, Up and Down, Aztec Challenge and Blue Max. The package is scheduled for release before Christmas for the C64, price £9.95. A disk version will also be available, but the price has yet to be decided.

Is the market about to be saturated with bargain compilations, making gamers simply wait for the star game compilations instead of buying the originals?

Nick Alexander who masterminded "Now Games", felt there was room in the market for more compilations.

"The new release market may suffer but on the other hand the market seems to be picking up and these compilations mainly appeal to first time buyers. So in effect they represent extra business rather than taking it away from other parts of the market."

"Compilations have been around for a long time but what is new is the licensing agreements that mean games from different companies can be included. There's nothing worse than seeing tired old titles being trotted out."

"Compilations haven't hit the record market and in the same way I don't think they will adversely affect the software market."

Nick revealed that a follow up to "Now Games" is in preparation. He is negotiating for bestselling titles from other companies but said revealing a provisional tracklist would be "premature".

Watford's Romspell reviewed p.20
Ron Complex – the grilling continues p.17
Programming for the Amstrad p.18
Games for Amstrad, BBC, C64 and Spectrum
All the new releases p.10

Trivia

A family game for 2 to 4 players in which mum is just as much at home as the sports crazy son.
Over 2000 questions on six subjects like Entertainment - Sports - History.

C64 - Amstrad - Atari - BBC - Spectrum £7.95

FIVEaSIDE

A soccer game with real pace in which passing skills are as essential as speed. Penalty shoot out truly tests your anticipation.
One or two player option.

C64 - £5.95
Spectrum - Amstrad
Atari - BBC - MSX SOON

SLAP SHOT

A fast and furious game which requires skill and fast reactions. Ice Hockey is a tough game but persistent rough game is punished by roughing penalties.
One player or two player option.

C64 - Amstrad - MSX £8.95

Assume control of this unique fighting machine. Take care that you practice take off and landing thoroughly before you embark on a combat mission to seek and destroy the enemy aircrafts. Use your radar to locate the carrier and land in worsening weather conditions as you progress through the ranks.

C64 - Amstrad - BBC £9.95.
Atari - Spect - Electron SOON

JUMP JET

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ANIROG

HOME COMPUTING WEEKLY

September 24-September 30, 1985 No. 131

Soapbox

With the PCW show well behind us for another year, perhaps it is about time we started wondering why it is necessary for such events to be staged.

The obvious reason is surely that companies can promote new and innovative products which have not been seen before by the public. A similar idea to such concepts as the Ideal Home Exhibition and the Boat Show.

However, as a member of the public visiting the show, I was disappointed to find that there was very little on display which was new to me. I spoke to many people manning stands who said that although they had new products on the way they were not being launched until nearer Christmas. Others regreted that although they had planned to display new releases etc., these had, unfortunately, not been ready on time.

I appreciate that there are many factors involved in launching a new product and hiccups can occur at the last moment to delay production. I also appreciate that the timing of a launch is significant especially as the industry is gearing itself up to the Christmas boom. Having said this, I think it is unfair to the visitor who has travelled a long way to attend such a heavily advertised extravaganza, to arrive there only to find that the expected treats and surprises in store are non-existent. **R.C.**

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- Level 9's Red Moon scrutinised in the Dungeon
- Our reviewer aboard the Sound Buggy
- Ron still searching for the ultimate Trilby...

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BASIC LIVING — Jim Barker/Jon Wedge

Robin of Sherwood

Adventure INTERNATIONAL (U.K.)

Robin of Sherwood
The Touchstones of Rhiannon

© 1984 H.T.V. Ltd. Goldcrest Films and T.V. for based on the series by Richard Carpenter.

An Adventure by Mike Woodroffe and Brian Howarth

SPECTRUM 48K WITH GRAPHICS
Cassette £9.95

There's games worth up to £995 for the hundred winners of our Robin of Sherwood competition — so get out your bow and have a go

There will be another hundred foresters at the end of this week's competition as Adventure International send Robin of Sherwood to our lucky winners.

The game is a rural delight, and to be truly successful you should don a natty green hood whilst playing the game.

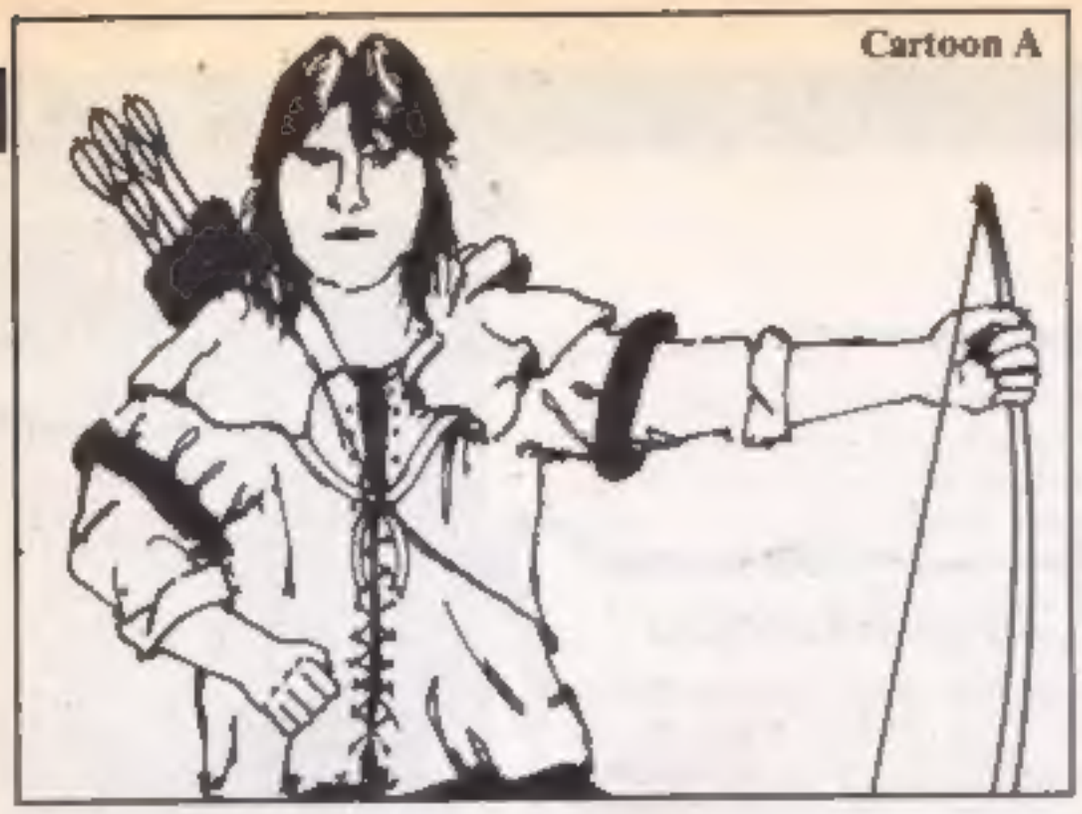
Suitably clad, you enter the dungeon where Robin and Much the Miller's son start the adventure after killing a deer on Guy of Gisburn's estate. Your task is to get yourself out of this predicament and then extract further instructions from Hearne to help you on your merry way.

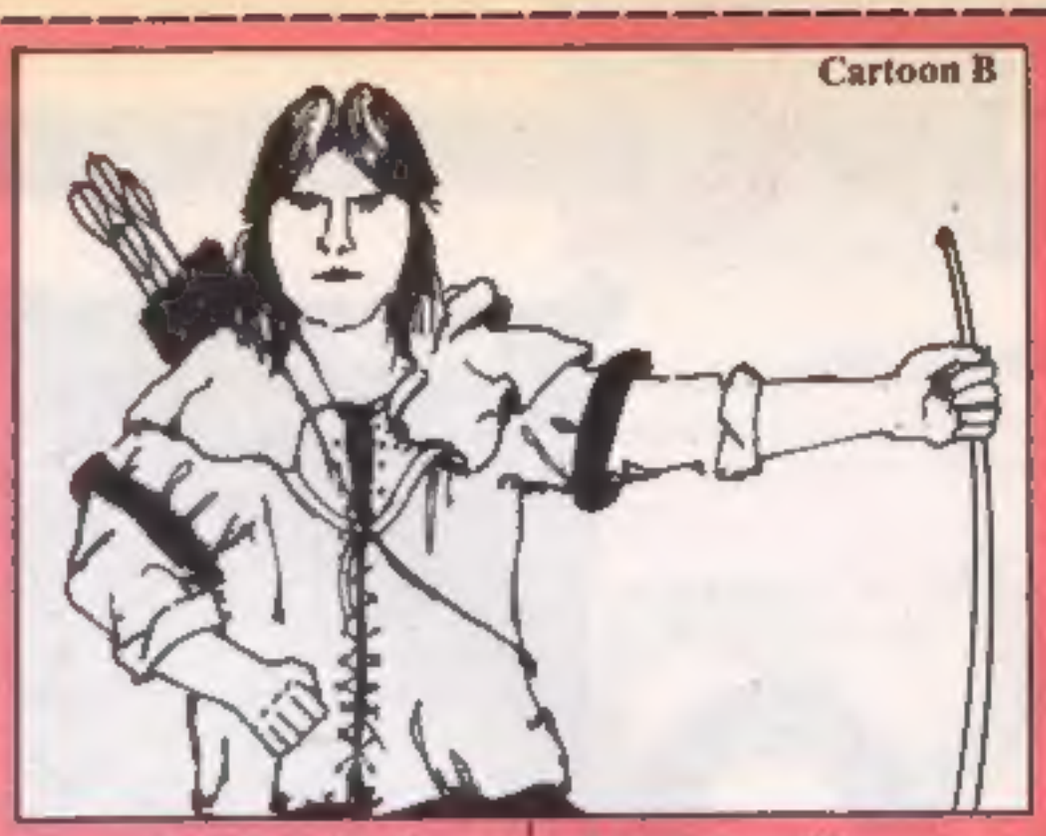
Regular viewers of the television series will recognise the main characters and locations of the game, which has been converted for the electronic screen by Mike Woodroffe and Brian Howarth. Brian is well known in adventure circles after writing his Mysterious Adventure series and, his latest blockbuster, Gremlins. Robin is Mike's first adventure which our adventurer, Peter Sweasey, believes will go straight into the top twenty.

There are versions of the game for C64, Amstrad and Spectrum owners which have full colour graphics and over 150 locations. The BBC and Electron version have a text only adventure. Whatever your machine, you will have hours of magical and creative fun wandering about the highways and byways of the Sherwood area.

Adventure International are a well respected company who started by importing the world famous, Scott Adams Adventure series. These are still selling well and conversions are currently being prepared for Spectrum, C64 and Amstrad machines, which will be sold as twin packs for just £9.95. I imagine that regular dungeon dwellers will find it hard to wait!

So it's time to put on your Lincoln green and hide amongst the undergrowth whilst you fill in your entry coupon — it won't help you win but it gives the neighbours something to talk about.





Robin of Sherwood Competition

Entry Coupon

Name _____

Address _____

_____

_____

_____ *post code* _____

Number of differences found _____

I do / do not wish my name to be put on a mailing list. _____

I own a Spectrum / C64 / Amstrad / BBC / Electron

Complete clearly and fully — if you are a winner this coupon will become your address label. Post to: Robin of Sherwood Competition, Home Computing Weekly, No 1 Golden Square, London W1R 3AB. Closing date: first post on Friday 18th October 1985. Please remember to write the number of differences on the back of your envelope.

How to enter

• Study the two cartoons — there are a number of differences between them. Circle the differences on cartoon B and seal the cartoon and coupon in an envelope. Write clearly the number of differences you found on the back of the envelope.

• Post your entry to Robin of Sherwood Competition, Home Computing Weekly, No 1 Golden Square, London W1R 3AB. Entries close at first post on Friday 18 October 1985.

• You may enter as many times as you wish, but each entry must be on an official coupon — not a copy — and sealed in a separate envelope.

• **Important:** please follow carefully the guidelines on entering — incomplete coupons and entries in envelopes with no numbers on the back cannot be considered. If you are a winner, the coupon will be used as a label to send your prize, so clear writing is essential.

The rules

• Entries will not be accepted from employees of Adventure International, Argus Specialist Publications and Alabaster Passmore & Sons. This restriction also applies to employee's families and agents of the companies.

• The How to enter section forms part of the rules.

• The editor's decision is final and no correspondence can be entered into.

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Trust **RUMBELOWS**

HCW249

NEWS

Invitations to a party

Bearing up to the strain of opening all your entries for Quicksilva's Rupert competition it was a pleasure to see that so many followers of that ursine cult are still out there rooting for the yellow-scarfed philanthropist. There were three first prize winners and 22 runners-up, all of whom will be enjoying the delights of Rupert's Toymaker's party.

The three big-prize winners who will receive a copy of the Quicksilva game, an authentic yellow Rupert scarf and the anniversary Rupert annual are T.Maley, Manchester, L.Prust, Barnstaple, and R. Sherry, Laindon.

The lucky 22 runners-up are as follows: S Thomson, B.F.P.O. 42; A Campbell, Cheltenham; M Buckley, Mount; C Boer, Hull; L Hadcock, Partington Urmston; J Chatterton; C Jess, Lisburn; N Impey, Higham Ferrers; S Wood, Wombourne; R Walker, Sedgley; L Pinkus, Bushey; C Clarke, Consett; J Yarker, Pickering; M Brewer, Chessington; J Dawson, Sheffield; C Crane, Stoke; T Britton, Boverton; J Adams, Ashbourne; J Barnsley, Stafford; C Paulton, St Helens; A Huck, Southway; B Mawson, Slough.

Logo advances

Two new Logo enhancements for the BBC have been announced by Logotronics. Advanced Logo and Control Logo are contained on a 5¼ inch disc, priced £15 including a manual.

Advanced Logo gives instant access to a range of additional modules which include extra turtle graphics with colour blocking facilities and a list processing kit. A new feature is that several modules can now be used simultaneously.

For robot enthusiasts Control Logo enables the user to control any robotic or control device which can be attached to the BBC. Complex instructions can be compiled without the necessity of writing an interface.

Logotron, Ryman House, 59 Markham Street, London SW3

Summer Games winners

As we said the other week Summer Games II is going to be one of the hits of 1985 and judging from the number of you who entered the competition you agree with that assessment.

The correct answers to the posers were:

1 Tessa Sanderson
2 1968
3 Seven
4 Steve Cram
5 Four

Our congratulations go to the 25 winners who will be supplied with Summer Games I and II by US Gold as soon as possible. They are: A G Kluge, Rugby; Susan Chambers, Hornchurch; M R Tallis, Timperley; Muhli Matti, Finland; Clive Viagas, BFPO 52; D Woods, St Helens; David Bull, Maidstone; David Turner, Fenham; Richard Morais, Wolverhampton; Zain Abidin, Brighton; Simon Beal, Leigh-on-Sea; Fred Carter, Littlehampton; A Denton, Lincoln; David Fiksen, Peterborough; Joe James Maguire, Bardsea; James Beran, Crewe; B Mawson, Slough; G Smith, Rainham; Leroy Foster, Clapham Common; Jason Hayward, Heckmondwike; Jason Jones, Birmingham; Antony Butwell, Selly Oak; Brett Perryman, Paignton; Andrew Cross, Long Eaton; Stuart McMenamin, Troon.

Victorious British mouse with trophy

British mouse triumphs

Did you know that the most intelligent mouse in Europe is British?

A British made miniature robot has carried off the coveted brass cheese trophy in the European Micromouse Championships. The robots, known affectionately as mice, were set an intelligence test to find the "piece of cheese" in the centre of a maze.

The fastest mouse was constructed by David Woodfield, chief engineer of the London based company, Intelligent Software. On the "blind" run the cockney mouse found the theoretical gorgonzola after only a minute and six seconds but on its final run it succeeded in tracking down the cheese in just 27 seconds.

The runner up, a Finnish mouse, still took over a minute even when it knew the layout of the maze.

Intelligent Software specialises in advanced computer products and software design and was a winner in the World Championship for computerised chess games.

Intelligent Software, 37 Bedford Square, London WC1

Pick a package or two

1985 may well be remembered in the home computer industry as the Year of the Bundle and Toshiba and Atari have announced their Christmas bumper bundles of hardware, software and peripherals.

Toshiba: Aimed at the first time buyer, the Toshiba HX-10 kit includes the HX-C810 data recorder, a step by step guide to MSX computing, three software packages (Teach Yourself Basic, Checkmate and Breakout), a blank C10 cassette and last but not least two mains plugs and a screwdriver. Not forgetting of course the 64K HX-10 computer itself. The whole package costs £139.99 and will be available at the end of September. The HX-10 on its tod will now cost £99.99.

Toshiba are also offering a music package that will include the HX-MU901 keyboard capable of 9 simultaneous notes, 65 different voices and 20 different rhythm patterns. The keyboard alone costs £279.99 and is available from October 1st but a package with the HX-10, instruction book and keyboard interface will sell for £369.99.

Old computers never die it seems they just get bundled and the HX-10 has moved aside to make way for the HX-22, a 144K machine with 80K RAM and 64K ROM that is priced at £249.99.

A Toshiba spokesman told HCW that educational and business packages are in the pipeline.

Atari: With the launch of the 520ST, Atari has found itself with plenty of bundling potential among its older machines and will be vying with Toshiba and the other major manufacturers in the Christmas computer package stakes.

The 800XL, 64K machine is now available with a joystick and game cartridge at a price of £70 or with a data recorder, joystick and software pack at a price of £99.00.

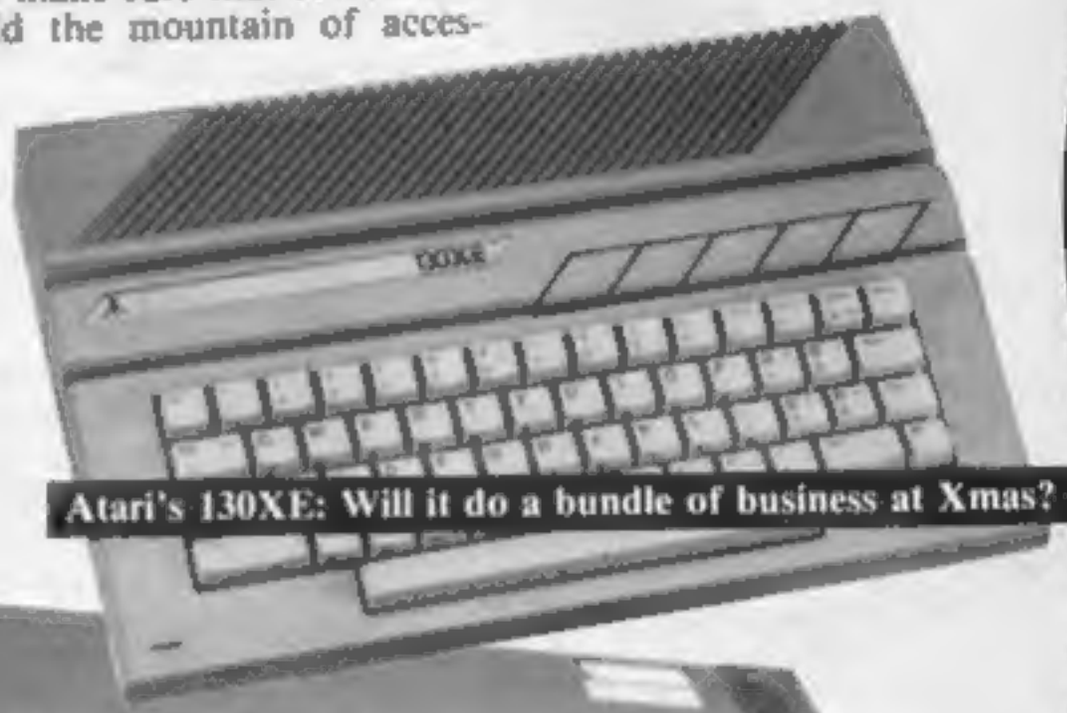
Launched in May of this year the 130XE, a 128K computer is now available as part of two packages. With a disc drive and four pieces of software it will cost £231.00 but with a 1027 letter quality printer and word processing software plus three more pieces of software it costs £305.

Both packages come with a programming book. On its own (yes you still can buy computers on their own) the 130XE is priced at £140.

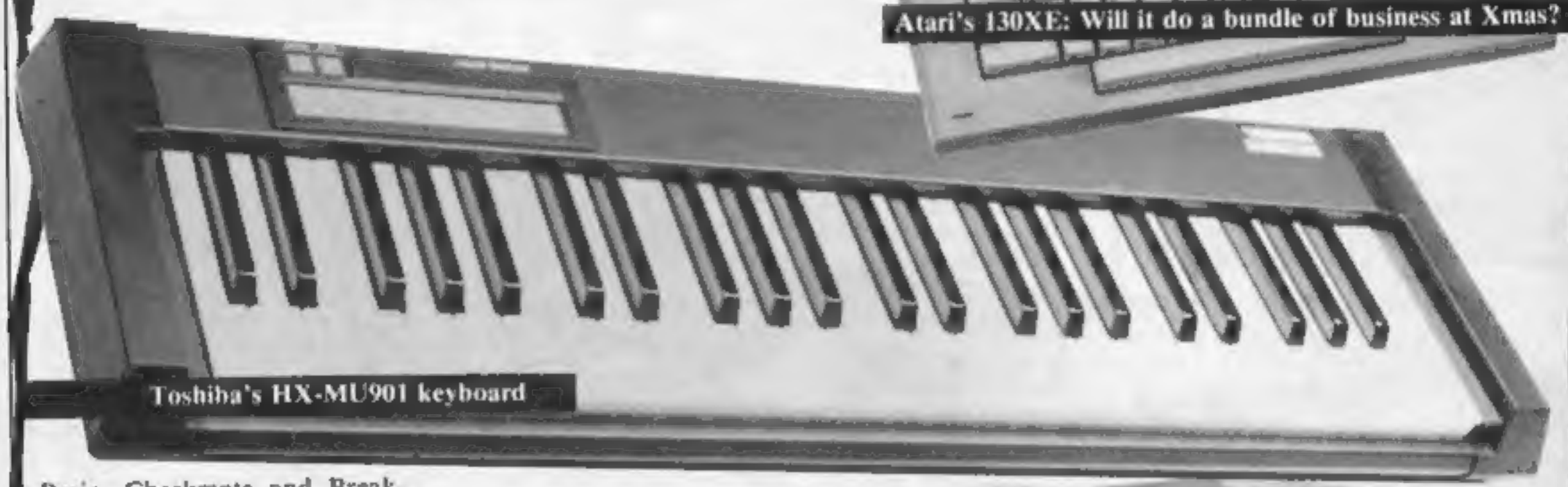
With bundling fever gathering pace in the run-up to Xmas there is no doubt there will be some bargains to be had but just make sure that somewhere amid the mountain of accessories there actually is a computer at the bottom of your stocking.

Toshiba, Toshiba Hse, Frimley Rd, Camberley, Surrey

Atari, Atari Hse, Railway Terrace, Slough, Berkshire.



Atari's 130XE: Will it do a bundle of business at Xmas?



Toshiba's HX-MU901 keyboard

Somewhere in this box is a computer

Join the club

The West Midlands is the latest area to be hit by the user group bug. Machine specific user groups are popping up all over the country and this Amstrad group based in Walsall, "intend to promote the practical use, both at home and in business of the Amstrad as well as for programming, education and entertainment." Members are welcomed at all levels of computing ability from BASIC beginners to professional programmers.

An additional bonus is a discount deal set up between the group and a local computer retailer. For further information contact:

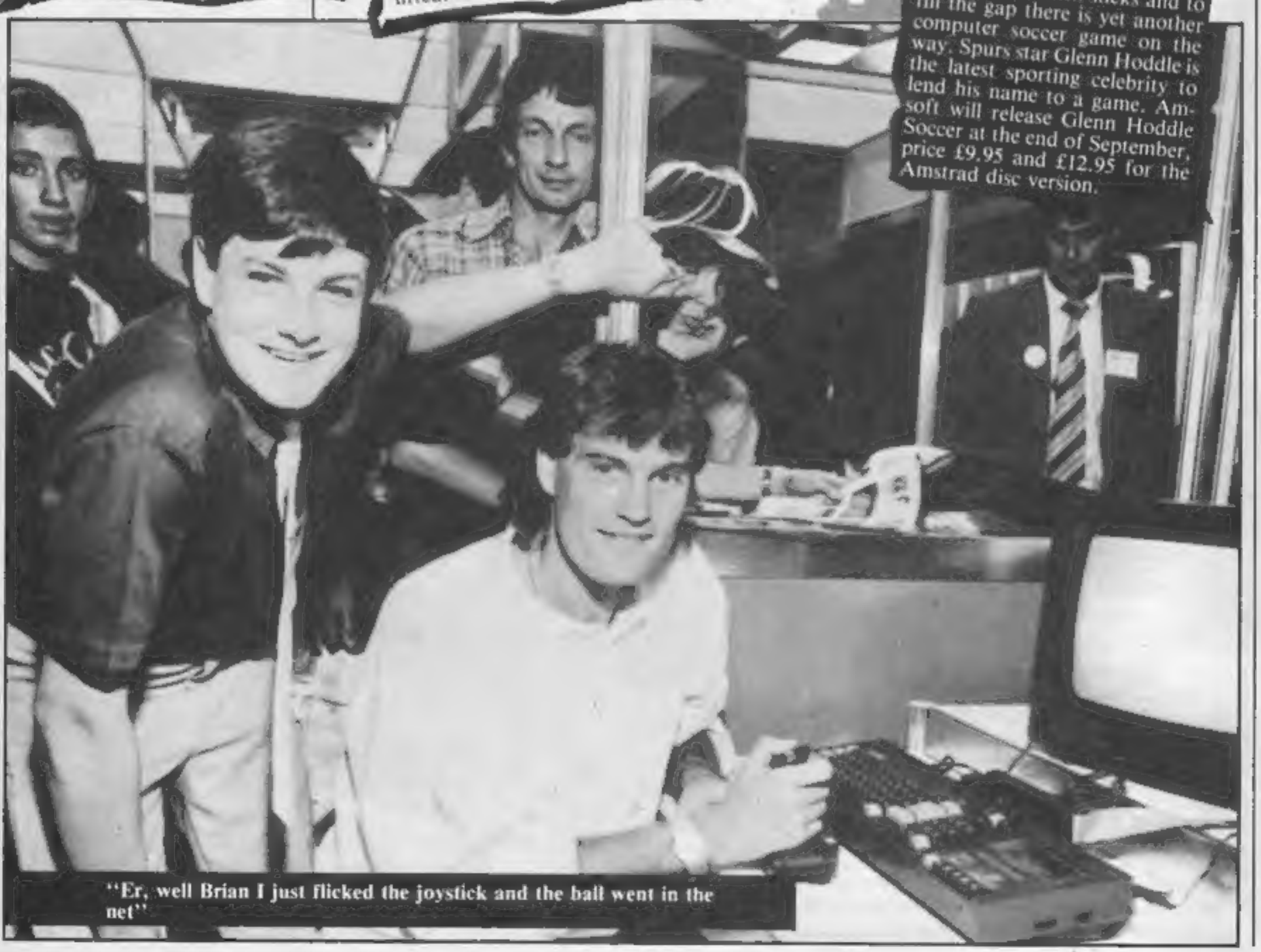
Stuart Williams, 26 Matlock Road, Lower Farm Estate, Bloxwich, Walsall, West Midlands, WS3 3QD.

Legal battle commences

A legal battle is brewing over Alligata's new game Who Dares Wins. Elite Systems and the Japanese company Capcom — originators of the arcade game Commando allege that Who Dares Wins is an infringement of copyright. Elite were granted a temporary injunction in the high court preventing the distribution of the game by Alligata. At the time of going to press an Alligata spokesman told HCW that the company "had put in an appeal to have the injunction lifted."

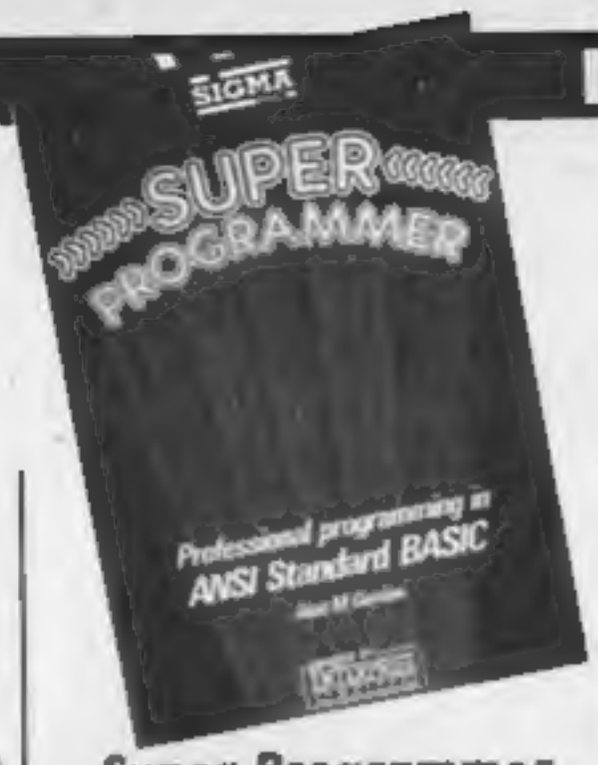
Hoddle tackles Amstrad

As the TV blackout of league football continues, soccer addicts are having to look elsewhere for their kicks and to fill the gap there is yet another computer soccer game on the way. Spurs star Glenn Hoddle is the latest sporting celebrity to lend his name to a game. Amsoft will release Glenn Hoddle Soccer at the end of September, price £9.95 and £12.95 for the Amstrad disc version.



"Er, well Brian I just flicked the joystick and the ball went in the net"

REVIEWS



Super Programmer

This book is subtitled, "Professional Programming in ANSI Standard BASIC" which sums up the book's contents fairly well. Written by Alan M Gordon, the book explains to the reader the principles behind, and advantages of, ANSI BASIC over other versions.

This type of BASIC is found on the Enterprise computer from which the book was derived. The approval logo of Enterprise themselves, suggests it is suitable for those Enterprise owners struggling to get to grips with this rather different BASIC.

What is ANSI BASIC? Well it is a heavily structured BASIC utilising procedures, DO loops, and a number of other relatively different commands. Alan Gordon's book takes you through this BASIC carefully but also provides many valuable suggestions to programmers using any BASIC, whether it be well or poorly structured.

What makes this book particularly readable, is the author's style and examples. He points out the devil of growing programs which are written almost entirely hands-on, while extolling the virtues of structuring, preplanning, flowcharting and careful error correction. Although this approach lacks anything new, too few people (myself included) use these principles when they embark on program designing and writing — and is essential for reference.

The progrma examples are fairly useful; a variety of sorts are included and there is a handy appendix entitled, "An excursion into Binary". All in all, a worthwhile, serious programming book for ANSI BASIC users. **C.G.**

Price: £6.95

Publisher: Sigma Press

Address: 5 Alton Rd, Wilmslow Cheshire SK9 5DY

ENTERPRISE

Advanced Z80 machine code programming

Are you the type of computer enthusiast who has just tackled his first "Introduction to the Z80" type book and survived relatively unscathed? If so, having mastered the basics of Z80 assembly language you may be wondering where you can learn more. One book recently released and aimed at filling this gap in the market — "Advanced Z80 Machine Code Programming" by William Neischke — could be just what you are looking for.

The programs are written using a Tandy TRS-80 computer, (remember those?) so it is essential that the users are very familiar with the complete memory map of their particular computers.

The first chapter discusses that old chestnut of program design. Some of you may get away with writing BASIC programs whilst sitting at the keyboard. But when it comes to assembly language programming it is absolutely essential that you decide exactly what you want the program to do and how it is to be done before you begin coding.

The remainder of the book is dedicated to writing a series of subroutines and short programs. These include string manipulation, arrays, data compression, maze games, and adventure games. Finally there are sections upon writing commercial software and how to tackle the many problems associated with the marketing of your product.

The book is a very competent piece of text but I cannot over emphasise the importance of knowing your machine inside out. Without this knowledge the book will be of little use. **J.R.**

Price: £12.95

Publisher: Interface Publications

Address: 9-11 Kensington High St, London W8 5NP

Machine: 280 based micro

Rating: keen

Castles And Kingdoms

The back cover of this book calls it "one of the most diversified and mind cracking adventure offerings of our time". Does it live up to this claim? What you get for your £5.99 are 15 BASIC adventures, all with Dungeons and Dragons style scenarios. The authors are American and the plots dull.

Preceeding each adventure is an entertaining short story. The games themselves are pretty simple, with brief text and a small vocabulary. Players accustomed to full sentence input and complex problems will be disappointed, and, of course, there are no graphics. Some games are better than others; my favourite was the longest, Firekeep.

Typing them in will take ages, and this is the book's greatest fault. Each time you have to type in certain routines, like the parser and movement decoder — which vary slightly from game to game — but occur in all of them. This is a wasteful use of the book form, because it involves entering the same thing 15 times. It would be more sensible to put an adventure "core" at the beginning, then supply 15 sets of data for it, which would enable the player to design his own games. It would also have been a good idea to include vital clues in the stories.

If you really want these adventures, instead of buying this book send your name, address and a cheque for £3.50 to Virgin for a tape version. It's cheaper — and just as good. **P.S.**

Price: £5.99

Publisher: Virgin Books

Address: 328 Kensal Rd, London W10 5XJ

Author: Bob Liddil

C64

RELEASES

All the releases under the sun and some from space too in this weeks round up of software from around the galaxy

Bits and pieces

• Cartoon capers this week as two animated favourites are set to hit the home micro. **The Flintstones** and **Scooby Doo** both from the Hanna Barbera stable have been snapped up by Quicksilva and Elite. Fred and Wilma and the rest of the Flintstone family will be appearing in Quicksilva's game scheduled for release on November 14th. The graphic game features Fred attempting to build a house in a desirable quarry in the suburbs of Bedrock. It is rumoured that the first game in what is envisaged to be a Flintstone series does not include the legendary Barney Rubble.

• Elite have **Scooby Doo in the Castle Mystery**, set for release at the end of October. It is described as "The first ever computer cartoon" and sets Shaggy and Scooby the task of unravelling the mysteries of McUrloch Castle. The graphic game which uses speech bubbles for communication was lauded by Elite's sales manager Steve Wilcox, who said, "The best comparison we can draw, is with lazer disc games, the players role is very much as the director of an interactive cartoon."

• Elite who have several other cartoon characters up their sleeves for future release, will bring out Scooby Doo for Spectrum, C64 and Amstrad at £6.95, £7.95 and £8.95, and at £11.95 and £12.95 for C64 and Amstrad discs respectively.

• Hewson Consultant's **Southern Belle**, the steam engine simulation which has become a surprise hit on the Spectrum is scheduled for release on Amstrad on October 10th and further conversions are planned for the near future.

• The role playing adventure books **The Way of the Tiger** are to be converted for the home micro by Gremlin Graphics. The series written by Mark Smith and Jamie Thomson are based on the adventures of the Avenger, a Ninja warrior who uses his mysterious powers in defence of the weak in the battle against the forces of evil. The computer games which have been written in collaboration with the authors promise plenty of gameplay and interaction. The first of the series to be available in February 1986 will be for Spectrum, C64 and Amstrad.

Ian Stewart, marketing Director of Gremlin Graphics said, "There's a lot of hard work ahead combining the talents of specialists from many fields — the arts and the sciences — but we are all hyped up to a project that we are confident is going to set the standard for a long time to come."

• Tynesoft are entering the sports simulation field with Winter Olympics featuring down hill skiing, ski jump, two man bob, speed skating and slalom skiing. Available in October for the C16/plus 4, Winter Sports costs £6.95.

Chalk it up!

Chalksoft, the Spalding based Edsoft house has announced five new titles to be released in October for the BBC. **Centre-Ville** is a French language set encompassing directions, colours, numbers, etc and costs £17.50. **Number Five** is a five program maths package covering simple algebra, tables, estimating and reading dials. Available only on disc it costs £14.95. **Statspak** is a program aimed at those learning statistics vital or otherwise and retails at £17.50.

In a different vein is **Yes Chancellor**, a simulation of the British economy. Can you steer the economy clear of the rocks? Instead of facing deadly goblins or firebreathing dragons you confront the horrors of inflation and the national debt. The program is written by a former senior official of the Inland Revenue and the BBC disc costs £7.50.

Hotline Quiz is a general knowledge contest with a difference as the world can only be saved from nuclear war if you get those answers right. There is a facility to make up and include your own questions and the avoid armageddon quiz costs £14.95. A Spectrum version is also available (£9.95).

Second home for Henry

If it moves, compile it,seems to be the school of thought in the software industry at the moment and English Software are the latest house to go on the compilation trail.

Two tapes entitled Henry's House and Friends, Volumes 1 and 2 will be available from October 2nd for C64/128 price £6.95.

Volume One contains Henry's House, Jet-Boot Jack, Stranded and Neptune's Daughters. The second package includes the previously unreleased Soldier of Fortune, Witch Switch, Legend of the Knucker Hole and Henry's House.

Also released on October 2nd is Topper the Copper, an arcade game for C64/128 priced £8.95 and £12.95 (disc). The Game is a whodunnit featuring seven sinister suspects and Topper the Copper is out to find the culprit.

R E L E S

Earth under siege

Marsport is the first part of a trilogy from Gargoyle Games entitled The Siege of Earth. Available now for the Spectrum with an Amstrad version to come in October (both £9.95). Marsport is a futuristic space adventure played out in the ten levels of a domed and possibly doomed city. The estimated corridor count is 920 and of them are rooms bulging with aliens, robots, bombs, puzzles and other paraphernalia designed to hook the hardened games player.

The plot is a "protect the force field" mission involving a member of the Terran Liberation Front who must retrieve the instructions on how to super-harden the earths atmosphere from the aliens hometown of Marsport.

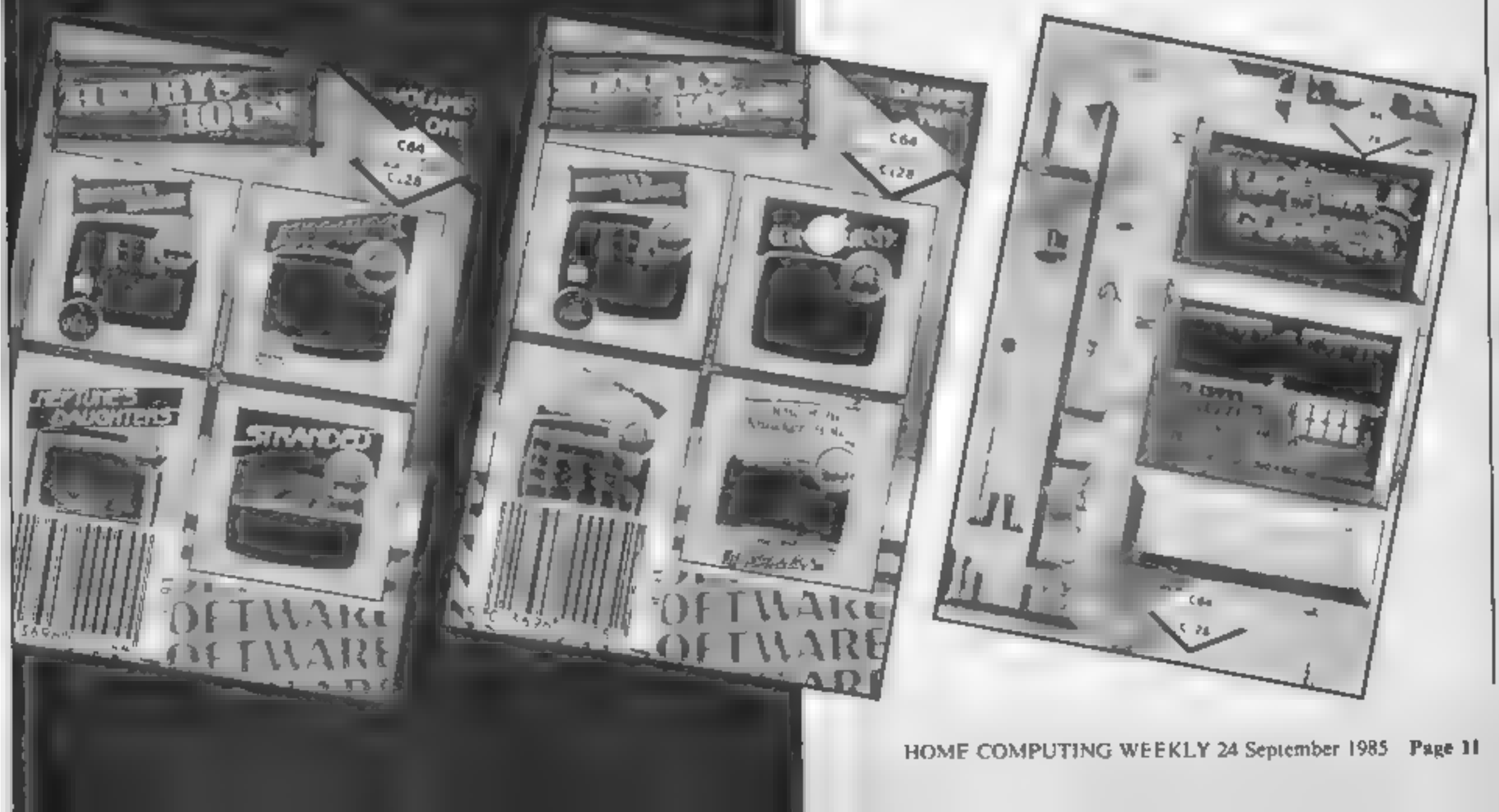
The trilogy takes place over a 500 year time span beginning in 2424, luckily those absorbed by Marsport should not have to wait that long for part two. Marsport Formats due in January '86 and the final game Gath should materialise in April of next year.

Gargoyle release Sweevo's World this November for the Spectrum 48K and Commodore 64 (both £7.95). Sweevo is a robot with his circuits in a twist. Designed to solve all of man's workaday problems he finds he has plenty of his own due to his unforeseen clumsiness.

Ministers and moles

Mosaic have secured the rights to the BBC comedy series Yes Minister and the game, programmed by the Kamikaze Corporation will be available in November. In this strategy game set in the corridors of power you, Sir Bernard the Private secretary, all-encompassing schemes make the Ministers do a mess. Yes Minister will be available for the Spectrum, C64, Amstrad and BBC (£9.95) and a disc for BBC, C64 and Amstrad (£12.95).

Mosaic are also releasing the Secret Diary of Adrian Mole Aged 13 ¾, based on the best selling book by Sue Townsend. The program is written by Level 9 and no surprisingly you are cast as Adrian. The illustrated text game is available on cassette for most leading micros priced £9.95 and on disc priced £12.95 for the Bbc, C64 and Amstrad.



REVIEWS

Boulder Dash

Guide Rockwell through a series of sixteen different caves collecting jewels as you go Heard it all before? Don't you believe it. Mirrorsoft have taken this well worn theme and turned it into a sure fire winner called "Boulder Dash".

Rockwell is a little beetle-type character who inhabits caves, these contain a mixture of sand and boulders. Rockwell can bury quite happily through the sand, leaving a tunnel as he goes. Burying under a boulder causes it to fall into the newly formed tunnel. If the boulder had been at the bottom of a large pile of rocks then the chances are that our little buddy would create a landslide.

By now you should be beginning to get the idea that all is not as straightforward as you may have imagined.

There are a set number of jewels present on each screen, these must all be collected before you can exit to the next screen. Quite often the jewels will be in close proximity to a precarious looking pile of rocks. How to negotiate these, or even cause them to fall in the opposite direction, is the essence of the game

The rocks all fall in accordance with set laws, the collapse of a massive pile of boulders is a joy to watch. Another example of the attention to detail is the impatience of the hero. Dawdle for more than a second or two and he stands there, hands on hips, tapping his foot.

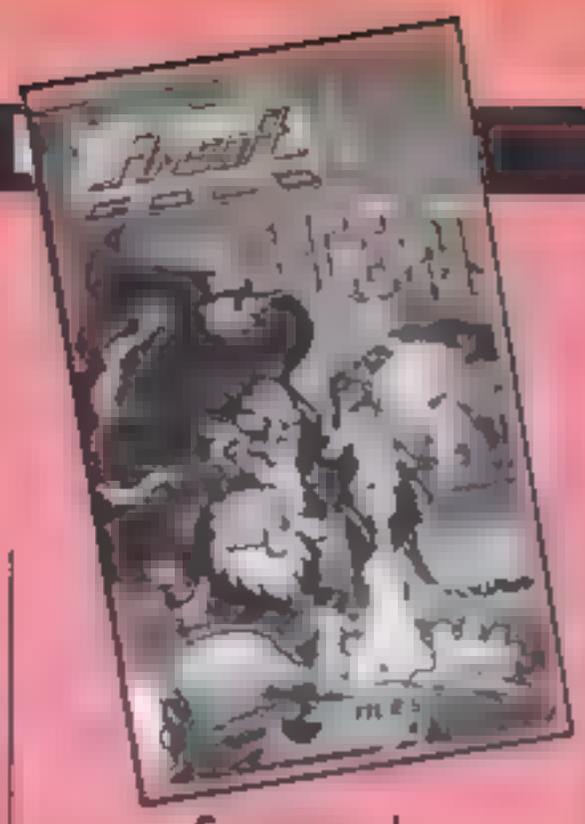
This game has received a higher accolade than any HCW rating, my wife is crazy about it! **J R.**

Price: £9 95

Publisher: Mirrorsoft Ltd

Address: Mirror Group Newspapers Ltd, Holborn Circus, London EC1P 1DQ

AMSTRAD



Sorcery +

Hands up all of you who thought that Sorcery was going to be the number one game of 1985. Well you're all wrong because it has just been ousted from that number one slot by another program, Sorcery plus!!

The evil Necromancer, Boo... Hiss! has imprisoned nine of your fellow sorcerers in his nasty castle, you must release them.

To describe Sorcery as an arcade adventure is nothing short of criminal. When compared to Sorcery's graphics every other game pales into significance. Sorcery plus is better still

The first thing I should tell you is that Sorcery plus is only available on disc. It won't be released on tape as it relies upon things known as disc overlays to make this new version much larger than before As you move between rooms the drive whirrs for a fraction of a second as new data is loaded into the computer

There are now 47 screens to negotiate whilst searching for the sorcerers, who incidentally are in new locations. Having completed this mammoth task you must then scour a further 27 screens in search of the necromancer himself!

Some of the new locations are even more breathtaking than the originals. There is also a new set of baddies, an excellent demo mode, and the facility to save your high score for posterity should you get amongst the all time greats.

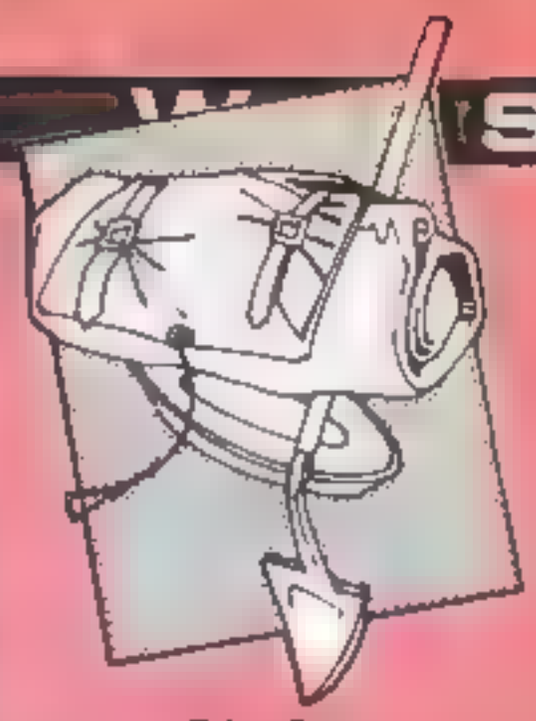
You may have thought Sorcery was good, but Sorcery plus is the best reason I can think of for buying a disc drive. **J.R.**

Price: £13 95

Publisher: Alligata

Address: 1 Orange St, Sheffield S1 4DW

AMSTRAD



Dig-Dug

Poor detailed graphics and average sound effects label this as another US Gold release of what is a relatively aged game

Under joystick control, one or two players control a "miner" whose task is to burrow underground destroying monsters which lurk in small caves — his only weapon being a "bicycle pump"? That's what it seems like, anyway. Several pumps of this and the creatures inflate and explode. The miner can also tunnel under rocks and drop these on the monsters for extra points, although this is particularly hazardous.

Physical contact with most things i.e. falling rocks or wandering "nasties", means death. If left alone for long enough, the latter undertake a spiritual transformation and can move through the solid earth, either towards the miner or up to the surface. It was difficult to assess the actual objective of the game as the review copy contained no instructions — it appeared, however, that monsters reaching the surface caused the loss of a life.

Destruction of all the monsters leads on to a further similar, but faster, screen — there being twelve in all!

Overall, this is a poor offering by a company renowned for its graphically pleasant, if not always addictive, games. The standard of graphics was the poorest I'd seen in any Atari programme for some time, and the addictiveness of gameplay — there wasn't any!! — didn't help to reduce the impact of poor presentation.

Not a purchase to be recommended except to the fanatic arcade gamer. **G.C.**

Price: £9.95
(£14.95 disc)

Publisher: US Gold Ltd

Address: Unit 10, Parkway Ind Centre, Heneage St, Birmingham B7 4LY

ATARI

Video's Revenge

Cast aside your copies of Acornsoft's Planetoid, and ha. its new successor Video's Revenge. At one third Planetoid's original price, and then 10 times the addictiveness, this has to be a winner.

Video's Revenge is an exciting mixture of Space Invaders and Defender; combining vertical scrolling, a scanner situated on the right of the display, and rapid firing.

The idea is to hurtle towards each group of unsuspecting aliens, then wipe them from living memory as they appear on main screen. From time to time an alien energy balloon appears, blasting it 12 times results in its destruction, and the dispersion of an energy pack. By picking this item up you gain two extra firing turrets, which is enough to scare the socks off the most fearless of intergalactic aliens.

Achieving this status generates an overwhelming feeling of power and superiority. But don't underestimate the enemy fire-power, they're bound to knock you out of the sky sooner or later, reducing you to a single turret once more.

At the beginning of the game you are supplied with three lives and energy units. Energy is lost when resorting to smart bombs or the inviso unit — a device which leaves you indestructable for a short period of time.

The graphics are stunning, the action fast, and the sound is absolutely mind-blowing. I can honestly say that it's the most addictive arcade game I've ever played on the BBC micro. It's also the cheapest. Buy it now!

M.H.

Price: £2.99

Publisher: Budgie Budget Software

Address: Rino Marketing, 1 Orange St, Sheffield S1 4DW

Doppleganger

If you think a doppleganger is something to do with page 3, you're wrong! It's a wraith or spook with a double existence in human'' and ghostly form. In this case it's a rather sweet teutonic maiden depicted in Mode 0 graphics who can be manoeuvered via joystick around what appears to be a large castle — but only after the Beethoven of the demo has finished

What distinguishes this from other arc-adventures is that you can guide ghost and human forms individually, switching from one to the other using the fire button. It's just as well because the doors will only allow entry to one of them. The program switches control and display instantly from one to the other in quite an impressive way.

The castle too is impressive. You have a Knightloresque point and a similar 3-D effect results, except that this one is in full colour, and, given the inherently chunky pixels of the screen mode, is very well done Accompanied by super sound effects various nasties appear in the rooms, and many rooms have what appear to be electro-mechanical obstacles to surmount

As if that isn't enough, a horde of deadly spiders follow your heroine too. Whilst the action goes on, the sands of time run out on screen, and, all too soon, your doppleganger becomes a skeleton.

I'd like to tell you what it's all about, but sadly, Alligata didn't send any info with this pre-production tape. Even so, an intriguing and carefully implemented game. **D.M.**

Price: £8.95

Publisher: Alligata

Address: 1 Orange St, Sheffield S1 4DW

Halley's Comet

As Halley's Comet approaches the Earth for perihelion on 9th February 1986 we are due to be inundated with programs explaining facets of its passage, if the fact that two have recently thudded onto my doormat is anything to go by.

This program will be history when the Comet recedes into the distance (unless you're around in 76 years time) and at present is either intended for experts or should have a much more comprehensive and simpler insert. What do Gibbons, RA/Dec (1950.0 epoch) and azimuth mean, for example, and who knows their latitude?

There are 10 animated, interactive screens covering every aspect of the comet from January 1984 to December 1986 with copying facility. Five colours represent atmospheric light conditions from day-time to night-time and flashing arrows warn if these could spoil the view.

Colourful LOADing screen leads to explanation of symbols used and a menu of eight options; the full 76 year orbit, close encounter orbit; Comet magnitude — brightness; visibility at two latitudes; data listing and plotting; starmaps, skygraphs and local skylines.

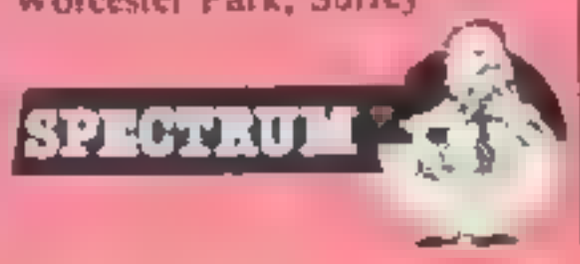
The insert states that you don't need to be an astronomer to enjoy it — but it must surely help understand it. Forgetting that it accepts February 31st — what does the Zenith/Nadir portion of the starmap screen show — even after "swop"? You will see the listing a lot — so learn "to restart GOTO 1". And, why suddenly alter control keys?

A good try, but not really a program for those with no starting knowledge. **T.W.**

Price: £6.95

Publisher: Eclipse Software

Address: 79 Ardrossan Gdns, Worcester Park, Surrey



Flipped

Hooked

Keen

Yawning

Comatose

The French Mistress: Level B

OK, I confess, I only studied German at school and failed that! Who better therefore, to test a vocabulary teaching program? If it works on me, it'll work on anyone! Whereas level A concentrates on vocab linked to situations, level B deals with colours, pastimes, tools, countries, and medical terms, then launches into parts of speech, including verbs in every tense

The tape divides into a control program, and files containing a section of vocab. Feeling distinctly *gris*, I loaded it in together with the colours file. A menu then presents itself from which you can choose to load/save a section of vocab, structure one yourself, receive the lesson, or test your progress.

Deciding on the lesson the screen clears to *noir*, and you can choose whether English or French appears first, and how long it stays on screen. Then, in glorious *bleu ciel*, masculine words are printed as opposed to *mauve* for feminine ones! They can be set to repeat until they stick in your head. Mode 1 is used, but the colours used aren't entirely successful on the green-screen.

The test section allows choice of English/French or French/English translation, and, after the prompt, any wrong key presses in your answer are bleeped. If you're struggling, the tab key offers some help in the shape of the next letter

No fancy graphics or sound, just plain, well error trapped BASIC, and *Oui!*, it works. I bet you're *vert* with envy!

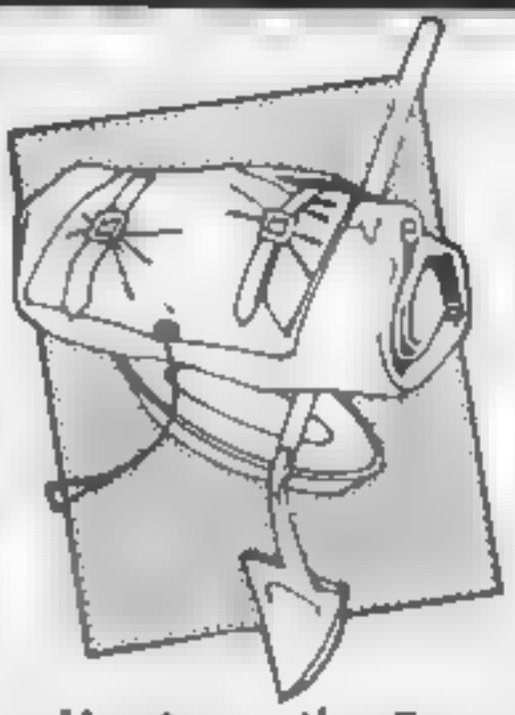
D M.

Price: £8 95
(£10.95 disc)

Publisher: Kosmos

Address: 1 Pilgrims Close, Harlington, Beds LU5 6LX

AMSTRAD



Monty on the Run

Monty has escaped from prison, and you must guide him through 49 screens of hideouts and secret locations. There is a weird assortment of moving nasties, ranging from flying alarm clocks to ghosts, which are extremely difficult to avoid even though Monty is able to somersault. A number of static objects are littered around, some kill Monty on touch, others are helpful and gold coins can be collected which boost your score.

A 5 item freedom kit can be selected at the start, however if you meet an obstruction which can only be passed by using an item you've left behind you must abort the game and restart!

The puzzles lift this game above the norm, for example, to enter the sewage works Monty must walk into a cake and have a particular item from the freedom kit. In some screens there are vertical rays which, if touched, transport Monty to another screen, but it's sometimes possible to pass through — a major problem is knowing which object Monty has encountered or is carrying, has caused a given effect, particularly since he must always carry 5 items from the kit.

The keys are well chosen, alternatively Kempston or Sinclair joystick interfaces can be used

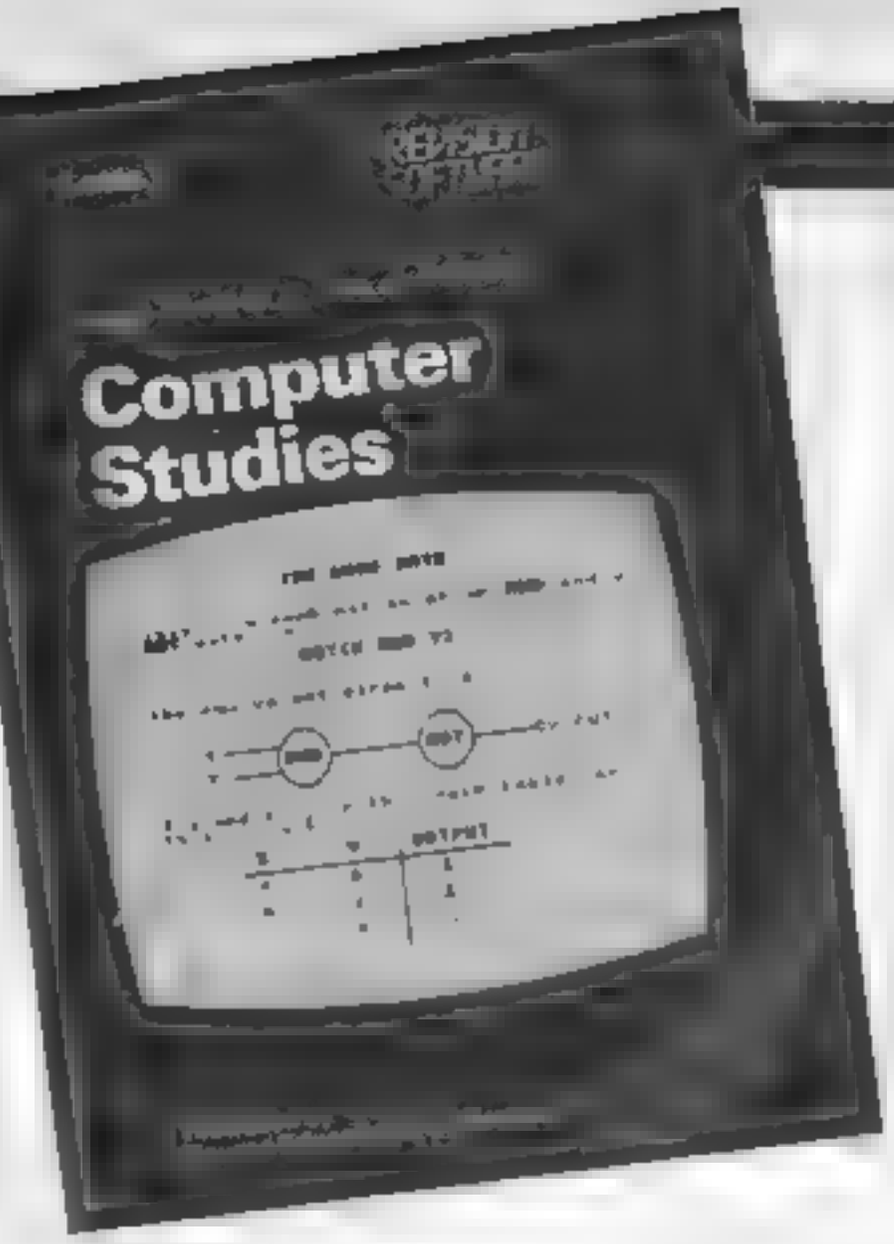
Monty on the Run is an exceptionally difficult platform-type game, requiring both arcade-type dexterity and some problem solving, ideal if you enjoy a challenge, although it seems over-priced. **S.J.E.**

Price: £8 95

Publisher: Gremlin Graphics

Address: Alpha House, 10 Carver Street, Sheffield S1 4FS

SPECTRUM



Computer Studies

This suite of 10 programmes, on two cassettes, is aimed at providing a comprehensive revision aid for the G.C.E., C.S.E. and G.C.S.E. courses of study. An explanatory leaflet is provided and this is clear and concise, so full marks for instructions!

The subjects covered are: the history of computers and information processing, computer systems, computer hardware, operating systems, data organisation, flowcharts, high level languages, low level languages, logic circuits and numbering systems! (Pauses for breath.)

I felt that the first five tracks listed above were, from the educationalist's point of view, weak, since they rely on the two techniques of multichoice answers and fill in the gaps either in text or diagram. In my view, being given a choice of answers, invites the student to employ the random keyboard prod approach until the correct answer appears and this promotes so little cerebral activity that the answer is unlikely to be stored in the cranium for long. The "fill in the textual" gaps technique is a better approach, since it does require a modicum of comprehension to arrive at the correct answer. However, the interpretation of human input is so inflexible, that this rapidly becomes the guess the computer's exact word competition

However, having made those criticisms, the final five tracks take a mega leap up the educational ladder by comparison. They are interactive and answers can only be arrived at by a series of logical thought processes and true comprehension of the topic. The high level language tutor is particularly useful, it presents short segments of programs in Beeb Basic and you are asked to state the value of a particular variable after program execution. Only a full understanding of operator assignment priorities would allow you to compute the correct value and if you get it wrong, the computer illustrates line by line, with the aid of a trace table how to arrive at the solution. The examples cover the major programming areas of expressions and assignments, branches and loops, subroutines and functions and finally, strings.

A version of CESIL (Computer Education in Schools Instructional Language), is provided, to give tuition in low level languages. This again is most useful and also provides a trace facility to show program flow and register updates at each step. The coverage of flowcharts, logic circuits and numbering systems is good and without going into too much detail, they are both probing and instructional

I feel that the minor disadvantages of the earlier tracks are outweighed by the overall usefulness of this package and that it would be a beneficial adjunct to most students' formal study courses. **M B.**

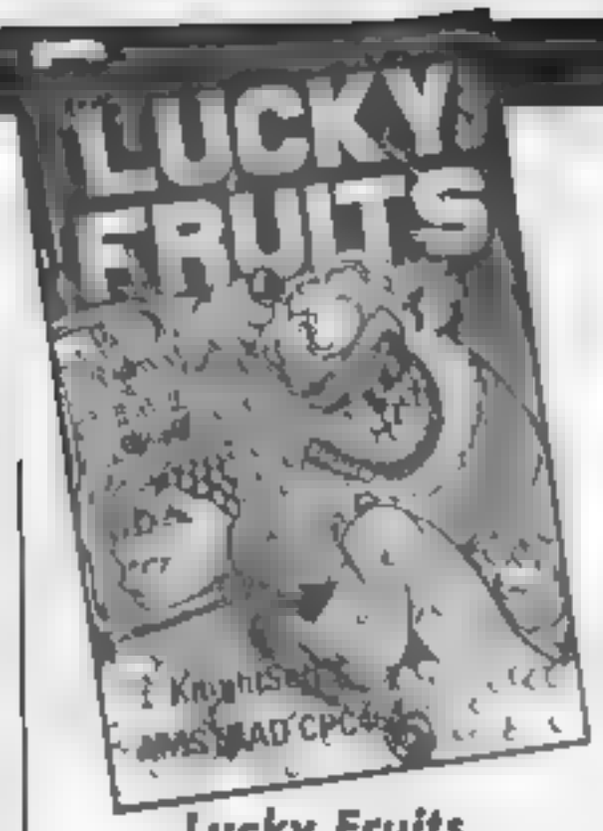
Price: £11 50

Publisher: Charles Letts & Co Ltd

Address: Diary Hse, Borough Rd, London SE1 1DW

BBC ELECTRON

REVIEWS



Lucky Fruits

The company that brought us Ammated Strip Poker has now sensibly turned its attention to other less risque and sexist computerised gambling games. Lucky Fruits as you probably guessed is a fruit machine game boasting nudges, holds, reverse, bonus and mystery wins as well as gamble features. It is claimed to be very much like the real thing and on viewing the graphics I had to agree.

The instructions are clear but I noticed a number of spelling errors If spelling errors such as "achived" and "Seris" (instead of achieved and series) get through then one wonders how well the program has been error checked.

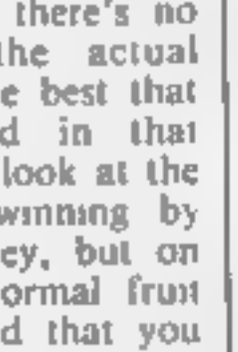
Playing the fruit machine is unfortunately not as realistic as the initial graphic screen. The scrolling is poor and nudging reels up and down does not always give the results that it should. I did like the Gamble feature which is just like machines I have thrown money away on in my misspent youth

The program is written in BASIC and, while there's no harm in that, the actual execution is not the best that could be achieved in that language. One can look at the various ways of winning by pressing the 'H' key, but on returning to the normal fruit machine screen find that you suddenly have extra holds on the three reels

The whole program smacks of a rush to get it published rather than a careful programming and debugging process. There are better fruit machine simulations on the market and I would not recommend this game. **C.G.**

Publisher: Knightsoft

Address: Unit E17, Glenfield Pk, Glenfield Rd, Nelson, Lancs BB9 8AR



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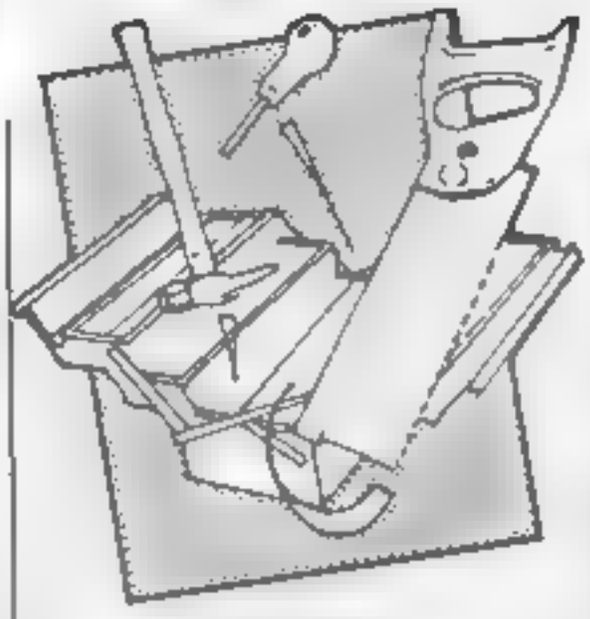


System X

One of the best features of Locomotive BASIC is the ease with which it can be added to Here, Pride Utilities take 3K of RAM but give in return 31 new commands for your 464/664.

They fall into three categories starting with FIL and CIRCLE — the latter is quite fast and can also draw ellipses. Also GPEN which changes the colour of the graphics ink easily

Next are easy ways to use the wealth of routines in the operating system that you won't know about unless you have the firmware guide. Cursor on and off, wait for a keypress, read a character from the screen, flush the keyboard buffer, inverse print, overprint, cassette motor on and off, reset the screen to default colours and so on.

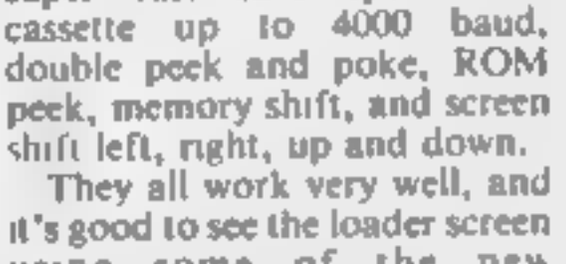
Finally, some toolbox and graphic commands, screen visible and invisible, a means of allowing your program to be unprotected if you wish it, super fast save speeds for cassette up to 4000 baud, double peek and poke, ROM peek, memory shift, and screen shift left, right, up and down.

They all work very well, and it's good to see the loader screen using some of the new commands. Very impressive, but sad to find it protected so you can't see how they did it. It can be broken into easily once you know the secret, but it's not in the 8 page manual which accompanies the package. Sad to find spelling errors. Even BASIC requires perfect spelling of commands! **D.M.**

Price: £9 95

Publisher: Pride Utilities

Address: 7 Chalton Heights, Chalton, Luton, Beds LU4 9UF



AMSTRAD

Deathstar

This shoot-'em-up game actually has a plot, rather than the usual simplistic "the aliens are coming, you destroy them before they destroy you" Although, it is a moot point as to whether shoot-'em-up applies in space — perhaps shoot-'em-along some arbitrary axis, might be more appropriate for three dimensions

Your task is to locate asteroids, using the radar at the top of the screen and spray them with bullets, so that they release crystals (a sort of mining operation). Collecting crystals gives you starbombs to use against the evil Deathstar later

However, there is competition for the crystals from the Deathstar's worker craft. They hover about the asteroids collecting any crystals that you miss and transporting these back to base, to build the Deathstar piece by piece (20 transported crystals complete the Deathstar). The mining operation is made more difficult by the presence of Warrior craft, so one has to ignore the asteroids for a while to despatch the warriors before they close in for the kill.

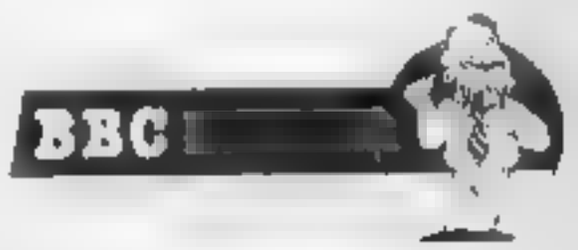
When the Deathstar has been completed, the screen flashes and the deadly star moves rapidly towards you. (Keep your eye on the radar). The best ploy here, appears to be to run for it, releasing star bombs as you go and these home in on the star, blowing chunks of it away. I ran out of bombs before the star was reduced to rubble and it caught me. My dismtegration was not particularly satisfying, it was symmetrical, with a few thin trails. I've always held that you should go out in a blaze of glory, but this fell short. This was merely a phut, lost in the vastness of the cosmos

The plot is original and use of graphics and sound is good and five levels of progression are provided for the video whizz kids. Overall it's probably not a chart-buster, but it's a competent piece with more originality than some I've seen lately. **M.B.**

Price: £9 95

Publisher Superior Software Ltd

Address: Dept C, Regent Hse, Skinner Lane, Leeds LS7 1AX



BBC

Macadam Bumper

This enigmatic title conceals a full scale simulation of a pinball machine, and I groaned inwardly when I started to load it. How boring! I was wrong...

Mode 1 graphics are used, and the resultant screen features a finely drawn, if visually weedy table to the right, whilst on the left, the "back" of the machine, with all its scoring paraphenalia together with an excessively voluptuous female-person. You have all the facilities you would expect from a real table, plus the ability to fetch it an almighty clout — which is "illegal" — in order to guide the ball.

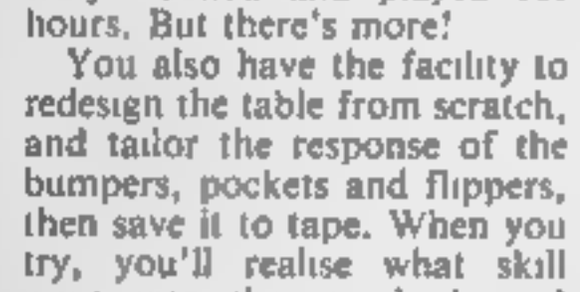
Up to four players are catered for, and lights flash, bells ring, and music plays in true pin table style. The author has clearly attempted authenticity in features offered, and as a result, some of them are so small, they're hard to see What's great, however, is the movement of the ball and flippers. True, there's the odd chicker, but the ball really moves like a ball, quick and true, the flippers flip instantly The whole table responds like the real thing. I was well and truly hooked and played for hours. But there's more!

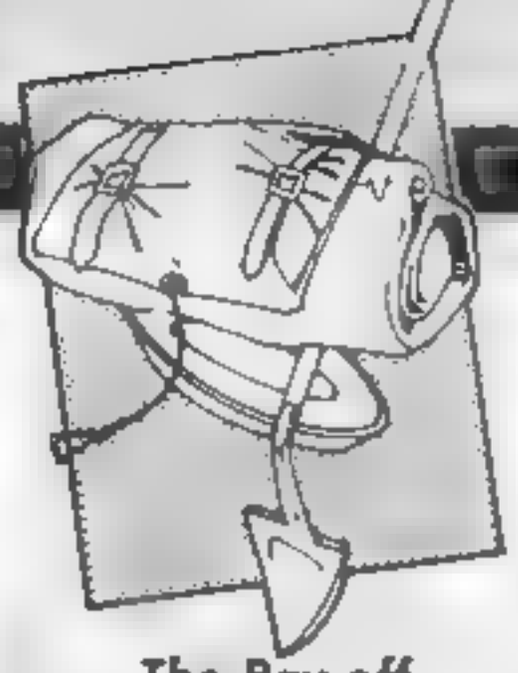
You also have the facility to redesign the table from scratch, and tailor the response of the bumpers, pockets and flippers, then save it to tape. When you try, you'll realise what skill went into the standard one! Very absorbing fun; Commodore owners have to pay almost twice this price Spectrum version on the flipside. **D.M.**

Price: £7 95

Publisher: PSS

Address: 452 Stoney Stanton Rd, Coventry CV6 5DG





The Pay-off

From the intriguingly named Bignose Software comes this original adventure, licensed from Atari — originally called *New Jersey Heist*, I think. Unlike the more usual magical setting or space orientation, this one is set in the seedy underworld of New Jersey: Damon Runyon territory.

It's a world of gambling, two-bit hoods and a slime-ball heavy called Luigi who you have to pay off — all you have to help you is a $50 bill, a crumbled note in your pocket and your wits. You'll certainly need those — despite the adventure's limited settings there are enough tricks and logical puzzles to keep you amused and entertained for some time. Let's just say that you need to find some jewels lurking in a safety deposit box and exchange these for a briefcase which needs returning to Luigi, before his hired muscle decide to wipe you out of course

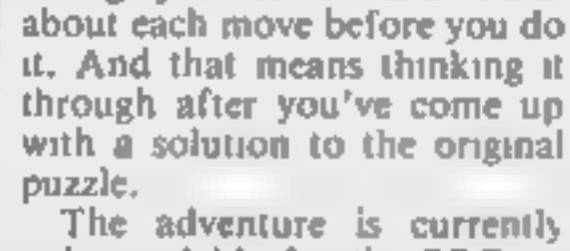
The whole adventure is refreshing — the setting is fun, there are a fair number of humorous responses and the tricks of the programmers do get exceedingly devious at times. For example, after spending a long time actually getting to the vault (past the guards and with the right tools) you might well be tempted to drill out the time lock — just remember that these guys enjoy seeing you suffer and think about each move before you do it. And that means thinking it through after you've come up with a solution to the original puzzle.

The adventure is currently only available for the BBC on disc or cassette, but an Electron version is due soon. There are no flashy graphics here, just staight text, but I think this might well appeal to people who aren't usually adventurers Now, if I could only work out why they've called themselves Bignose Software! **D.R.**

Price: £5.95
(£7.95 disc)

Publisher: Bignose Software

Address: 320 The Knares, Basildon, Essex



Wizard's Lair

A dual tape, Amstrad on one side, C64 on the other, featuring an arcventure which, surprisingly, loads with no illustrated loading screen

Once loaded, you find yourself the controller of Pothole Pete in a seven level cave system inhabited by the Wizard and sundry monsters, knights, executioners and so on. Your aim is to acquire spells, and the gold to make them work, weapons, and energy — you may even become invisible — on your quest to recover the four pieces of the golden lion, and thus escape. Your only other protection is throwing axes at the ghoulies. Sound familiar?

Mode 1, with its higher resolution, but limited range of colours, is employed, and the screens are well constructed with doors, secret passages, wardrobes, etc. You view from above, with a non too successful attempt to give a 3-D impression using angled right and left-hand walls. Sound familiar? Pete and his assailants move very smoothly, but aren't animated in the true sense of the word. The whole is accompanied by sound effects, and start/hi-score screens ring to sonorous, but slightly disjointed music.

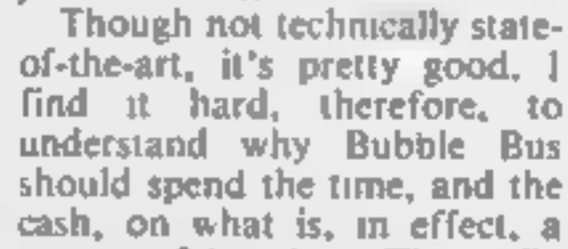
Though not technically state-of-the-art, it's pretty good. I find it hard, therefore, to understand why Bubble Bus should spend the time, and the cash, on what is, in effect, a version of Atic Atac. This really brings the rating down

If you really want this type of concept/plot, you won't be disappointed by Wizard's Lair, but don't expect anything new and stunning from it. **D.M.**

Price: £8 95

Publisher: Bubble Bus

Address: 87 High St, Tonbridge Kent, TN9 1RX



Starion

If you thought that Starion was jus a good shoot-'em-up by Timegate out of Elite, then read on ..

The control panel lies in front of you, comprising head up display of scanners, velocity, hull temperature, lives, pitch/roll/yaw indicators etc. Through the cockpit window a huge variety of enemy ships weave, pitching their missiles in the smoothest motion yet seen. Not a flicker. Drawn in wireframe, 3-D, vector graphics, they have real depth as they attack, and if all you had to do was blast them via keyboard or joystick, this would be an excellent, if unoriginal, game.

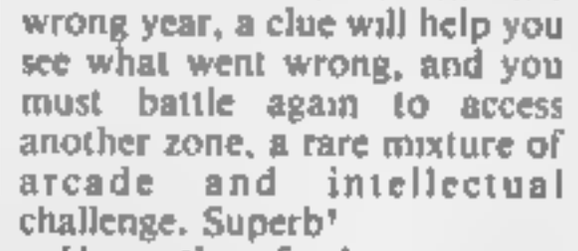
It isn't, however. As you down each ship, its cargo, in the form of a letter, must be loaded. Get the lot in your time sector, then the on-board computer asks you to rearrange the letters to spell something stolen from the Earth by the aliens. You must then select the year in which it belongs, warp through time, and land on the planet — avoiding alien ships as you go — thus correcting history. Do it once, you become a Chronotourist, but to become Creator, 243 zones must be unscrambled. Land in the wrong year, a clue will help you see what went wrong, and you must battle again to access another zone, a rare mixture of arcade and intellectual challenge. Superb!

Have this freebie on me: E.E.C. is found in 1968, and belongs in 1957, but will somebody please tell me what HORSEAID stands for and where it belongs? I'm going bananas! **D.M.**

Price: £9 95

Publisher: Melbourne Hse

Address: Castle Yd, Richmond TW10 6TF



SERIAL

RON COMPLEX

IN THE MAPLE X

Ron Complex special investigator gets deeper into troubled water and no one will throw him a line in this weeks instalment of our mega-mystery (or was that misery) serial

A match spluttered into life. Ron held it up but there was no sign of Lieutenant Pythagoras in the interrogation room. "Give me that match," said a voice from under the table

The Lieutenant stood up and grabbed the match. "I know what you're thinking, Complex," said the Lieutenant," but let's get one thing straight — it's not the dark I'm afraid of, I just like being under the table once in a while."

"Sure Lieutenant," said Ron as his interrogator fumbled with a light bulb, "It's quite natural "

The lamp came on again. "Right now, where were we?"

"You were threatening me with some really difficult algebra problems," said Ron, "but before you threaten me some more, whatever happened to my one phone call?"

"Oh yeah, it completely slipped my mind," snarled the lieutenant thrusting a cordless phone under Ron's nose.

Ron dialled slowly, pausing between each digit — just to get under the Lieutenant's skin

"Hello Murko," said Ron, "listen, I need you to bail me out. I'm being held at the downtown slammer on a breaking and entering rap."

Murko was desperately searching for his joystick beneath the bathwater. "Complex, you always phone at inopportune moments. I was just relaxing in the bath and about to get onto the final level of Chuckie Egg 27 when you called and now the joystick's lost in the suds."

"Murko, you astound me I'm in trouble here and all you can think about is a game."

"If you've been caught doing something that's shady, Complex, I don't know you. In fact, I have never known you. This conversation never took place. Sorry, wrong number."

Ron flinched as the receiver was slammed down. Murko flipped a switch on his turbo charged port-a-bath and made a quick circuit of the board room. He was a happy man. As he turned a corner water slopped over the rim of the bath onto the plush carpet

Murko grabbed a bottle of champagne as he want past the drinks cabinet and came to a halt by the window, where he picked up one of the 37 cordless phones strewn around the room

Meanwhile, Ron was sulking, but was being cool about it. The words "I've been framed," flashed like bright neon across his mind's eye

The phone rang. Lieutenant Pythagoras picked it up and listened "Well thank you sir We always appreciate any help we can get from honest citizens to help us carry out our job, and thank you for your compliments. I look forward to receiving the Murkotronic Super Plus Deluxe Hyperdrive Ghia."

Ron felt totally alone — Ron was totally alone. He bit down hard on a Cashew, imagining it was Murko's ankle. Why had he been defrosted just to be set up by the man who thawed him out? It didn't make sense.

Ron thought he heard a violinist playing Hearts and Flowers out of key somewhere in the building. He still had enough grip on reality to know it was his imagination.

"Never mind the violinist," said Lieutenant Pythagoras, "let's get your statement onto the computer. The lieutenant punched the keyboard of his computer and stared blankly at the screen

"That's odd," he said, "I can't get into the system." Across the screen, changing every second, were totally unconnected words...coconuts, tomato sauce, entry-phone, trip wire

Next week — The not so great escape

AMSTRAD GAMES WRITING

IT'S ALL LOGICAL

It's time to get logical as David Ellis has you searching your Amstrad's manual in this week's game writing article

Hidden away in the depths of the User Manual (Chapter 9 Page 3) are some very useful control code commands that you may not have come across before. Two of these are the codes 22 and 23. They control the way that Text and Graphics are printed to the screen

The first of these, code 22, controls the way that Text is printed to the screen. The normal mode (opaque) is set by:

PRINT CHR$(22)+CHR$(0)

In this mode, any text sent to the screen will overwrite whatever is on the screen at that printing position. The transparent mode option is set by:

PRINT CHR$(22)+CHR$(1)

Any text sent to the screen now will "mix" with whatever text is at that position. Try the following:

```
10 PRINT CHR$(22)+CHR$
   (1)
20 LOCATE 10,10:PRINT
   "AMSTRAD CPC464"
30 LOCATE 10,10:PRINT
   "                "
```

If you RUN the program you will see that "AMSTRAD CPC 464" will be underlined Change line 10 to CHR$(0) instead of CHR$(1) and RUN the program again, you should be able to appreciate the difference between the opaque and transparent modes.

The transparent mode is useful in that characters can be made up by overprinting at the same position on the screen. The following program will overprint four graphics characters to produce some squares:

```
10 PRINT CHR$(22)+CHR$
   (1)
20 FOR c=208 TO 211
30 LOCATE 10,10
40 PRINT STRING$(20,c);
50 NEXT
```

```
100 MODE 0:CALL &BC02
110 PRINT CHR$(23)+CHR$(0)
115 '
120     :FOR x=100 TO 300 STEP 2
130     :ORIGIN 300,x
140     :DRAW 40,0,1
150     :NEXT
155 '
160     :FOR x=220 TO 420 STEP 4
170     :ORIGIN x,220
180     :DRAW 0,-40,2
190     :NEXT
```

CROSS BLOCKS

What if you want to use the transparent mode when printing at the graphics cursor when using TAG? Try changing line 30 to

30 TAG : ORIGIN 200,200

If you RUN the program you will see that it does not work Try changing line 10 to:

10 PRINT CHR$(23)+CHR$(3)

and RUN the program again This time it works OK. What's the secret?

```
100 MODE 1:CALL &BC02:PEN 1:PAPER 0
110 gNOR$=CHR$(23)+CHR$(0)
120 gXOR$=CHR$(23)+CHR$(1)
130 gOR$=CHR$(23)+CHR$(3)
140 gAND$=CHR$(23)+CHR$(2)
150 opaque$=CHR$(22)+CHR$(0)
160 transparent$=CHR$(22)+CHR$(1)
170 tr$="...TEXT transparent"
180 op$="...TEXT opaque....."
190 x$="..graphics XOR..."
200 o$="..graphics OR...."
210 a$="..graphics AND..."
220 n$="..graphics NORMAL"
230 WINDOW #1,17,24,6,22
240 PAPER #1,3:CLS #1
250 PRINT gNOR$;:TAG:ORIGIN 55,300
260 PRINT n$;n$;:TAGOFF
270 PRINT gXOR$;:TAG:ORIGIN 55,250
280 PRINT x$;x$;:TAGOFF
290 PRINT gOR$;:TAG:ORIGIN 55,200
300 PRINT o$;o$;:TAGOFF
310 PRINT gAND$;:TAG:ORIGIN 55,150
320 PRINT a$;a$;:TAGOFF
330 PRINT transparent$
340 LOCATE 2,19:PRINT tr$;tr$
350 PRINT opaque$
360 LOCATE 2,21:PRINT op$;op$
370 LOCATE 1,1
```

GRAPHICS and TEXT INK MODES.

To understand we'll have to look at the control code 23. There are four different Graphics Ink Modes. These are:

CHR$(23)+CHR$(0) — Normal Mode

CHR$(23)+CHR$(1) — XOR Mode

CHR$(23)+CHR$(2) — AND Mode

CHR$(23)+CHR$(3) — OR Mode

The normal mode is similar to the Text opaque mode, where anything printed (or drawn in this case) overwrites whatever is on the screen. With the other three modes however, logic operations are performed between the PEN number that is to be drawn in, and the PEN number at the position where the drawing will take place on the screen. It is important to note that it is the PEN numbers that are operated on — not the number of the INK that is in the PEN.

You don't really need to understand how OR, AND and XOR work. If you study the chart (XOR...OR...AND) you will see that is the result of performing the logic operator between two pens. Type out the listing **CROSS BLOCKS** and we'll experiment

Line 110 sets the normal mode. The two loops draw two blocks of colour which intersect each other. A BRIGHT YELLOW (PEN 1) block is drawn first, followed by a BRIGHT CYAN (PEN 2) block. Note how the BRIGHT CYAN overwrites the BRIGHT YELLOW. Now try changing the CHR$(0) in line 110 to CHR$(1). This will now XOR the PENS. RUN the program again. The result is nearly the same, but this time the colour of the intersection is RED (PEN 3). Study the XOR chart and you will see why. The PEN 1 drawn by line 140 is XOR'd with PEN 0 which is the background. 1 XOR 0 = 1. So the resulting PEN drawn is PEN 1 (BRIGHT YELLOW). Line 180 now draws in PEN 2 PEN 2 is XOR'd with PEN 0 again. 2 XOR 0 = 2. When PEN 2 is XOR'd with PEN 1 at the intersection though, the result is 2 XOR 1 = 3. PEN 3 is RED.

Change line 110 to CHR$(2) to AND the PENs. What do you think the result will be? Well, nothing gets drawn at all If you refer to the AND chart you will see why. 1 AND 0 = 0. The drawing is therefore done in PEN 0 i.e. the background colour, which is why you can't see the blocks!

Change line 110 to CHR$(3) to see what happens when the colours are OR'd. Look at the OR chart and you will see that the result is the same as when the PENS were Xor'd.

Try changing the PEN number that the drawing takes place in, by altering the last number in lines 140 and 180 Try using pens 7 and 8. You should see that the intersection in XOR and OR modes is set to PEN 15, which is flashing PINK/SKY BLUE

This may be very interesting, but what use is it?

Change line 10 to CHR$(1) to XOR the PENS and RUN the program. Now run the program again without clearing the screen, but from line 110 with RUN 110. The two blocks are erased. XORing a PEN number by itself will always cause it to be drawn in PEN 0. The main use of the XOR mode therefore, is to erase any shape on the screen. All you need to do is to draw it again, in the same PEN number, with the XOR mode set, and it will disappear.

The OR and AND modes are used for making objects appear to go in front of, or behind other objects. You have to choose your PENS carefully to achieve the desired results, but this is the way that sprites can be implemented. The listing **GRAPHICS and TEXT INK MODES** shows the effect of this

Hopefully, now that you know how these control codes operate, you will experiment for yourself and put your findings to good use.

XOR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	0	3	2	5	4	7	6	9	8	11	10	13	12	15	14
2	2	3	0	1	6	7	4	5	10	11	8	9	14	15	12	13
3	3	2	1	0	7	6	5	4	11	10	9	8	15	14	13	12
4	4	5	6	7	0	1	2	3	12	13	14	15	8	9	10	11
5	5	4	7	6	1	0	3	2	13	12	15	14	9	8	11	10
6	6	7	4	5	2	3	0	1	14	15	12	13	10	11	8	9
7	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
8	8	9	10	11	12	13	14	15	0	1	2	3	4	5	6	7
9	9	8	11	10	13	12	15	14	1	0	3	2	5	4	7	6
10	10	11	8	9	14	15	12	13	2	3	0	1	6	7	4	5
11	11	10	9	8	15	14	13	12	3	2	1	0	7	6	5	4
12	12	13	14	15	8	9	10	11	4	5	6	7	0	1	2	3
13	13	12	15	14	9	8	11	10	5	4	7	6	1	0	3	2
14	14	15	12	13	10	11	8	9	6	7	4	5	2	3	0	1
15	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

AND	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
2	0	0	2	2	0	0	2	2	0	0	2	2	0	0	2	2
3	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
4	0	0	0	0	4	4	4	4	0	0	0	0	4	4	4	4
5	0	1	0	1	4	5	4	5	0	1	0	1	4	5	4	5
6	0	0	2	2	4	4	6	6	0	0	2	2	4	4	6	6
7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
8	0	0	0	0	0	0	0	0	8	8	8	8	8	8	8	8
9	0	1	0	1	0	1	0	1	8	9	8	9	8	9	8	9
10	0	0	2	2	0	0	2	2	8	8	10	10	8	8	10	10
11	0	1	2	3	0	1	2	3	8	9	10	11	8	9	10	11
12	0	0	0	0	4	4	4	4	8	8	8	8	12	12	12	12
13	0	1	0	1	4	5	4	5	8	9	8	9	12	13	12	13
14	0	0	2	2	4	4	6	6	8	8	10	10	12	12	14	14
15	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

OR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	1	3	3	5	5	7	7	9	9	11	11	13	13	15	15
2	2	3	2	3	6	7	6	7	10	11	10	11	14	15	14	15
3	3	3	3	3	7	7	7	7	11	11	11	11	15	15	15	15
4	4	5	6	7	4	5	6	7	12	13	14	15	12	13	14	15
5	5	5	7	7	5	5	7	7	13	13	15	15	13	13	15	15
6	6	7	6	7	6	7	6	7	14	15	14	15	14	15	14	15
7	7	7	7	7	7	7	7	7	15	15	15	15	15	15	15	15
8	8	9	10	11	12	13	14	15	8	9	10	11	12	13	14	15
9	9	9	11	11	13	13	15	15	9	9	11	11	13	13	15	15
10	10	11	10	11	14	15	14	15	10	11	10	11	14	15	14	15
11	11	11	11	11	15	15	15	15	11	11	11	11	15	15	15	15
12	12	13	14	15	12	13	14	15	12	13	14	15	12	13	14	15
13	13	13	15	15	13	13	15	15	13	13	15	15	13	13	15	15
14	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15

HCW regular Shingo Sigiura reviews two products to enhance text on your BBC — Silas, software to sharpen up your listings and Romspell, a spelling error spotter from Watford Electronics

One way to combat Beeb's memory restrictions is to use multiple statement lines, omit all unnecessary spaces and use single letter integer variables. A consequence of this action however, is that your program becomes totally illegible and impossible to debug. This is where SILAS (which, believe it or not, stands for "Super Intelligent List Augmenting System") comes in, or so the publisher claims.

Basically, what Silas does is to present your Basic or assembler program such that all multiple statement lines are split up, FOR-NEXT and REPEAT-UNTIL loops indented, spaces inserted where appropriate and keywords are highlighted.

To test it, I *RUN the machine code routine and loaded in a program with lots of multiple statement lines. After pressing f0, the routine announces itself by printing "SILAS". Typing LIST ⟨RET⟩ then lists your program in the new easy-to-read format. The routine does in fact, achieve everything the manual claims and programs are indeed much easier to read. Also, the manual is well written and easy to understand. However, there was one problem with this package.

You are supposed to be able to run a program which allows you to configure the routine to your own specifications. Unfortunately, booting the disc (as suggested in the errata) promptly crashed my machine, although it worked with another. I can only guess that the program is incompatible with Basic-II

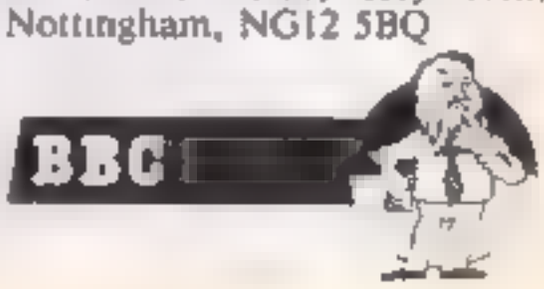
Apart from the misbehaving configuration program, the package worked fine. However, it's much too expensive! **S.S.**

Silas

Price: £8 95 (+ £1 p&p)

Publisher: Astral Software Ltd

Address: 152 Melton Rd, Stanton-on-the-Wolds, Keyworth, Nottingham, NG12 5BQ



Being a regular software reviewer and contributor, I write a lot of articles. Probably the most boring thing I have to do is looking for spelling mistakes. For reviews, it's not too bad since they are nice and short but looking through a 2000 word article at 2 o'clock in the morning is no fun! Some mistakes leki tihs are relatively easy to spot but transposition errors such as thsi ar surprisingly dificult to find. Obviously, someone at Watford had the same problem since they have come up with Romspell, a spelling checker for the Beeb

Romspell consists of a ROM which contains the checker program and a dictionary disc which contains a large selection of words. Typing *RS (RET) enters Romspell's menu page First you must load in the text you want to check. Now, the file may be checked interactively or in two passes. I will describe the interactive check first

On selecting the interactive menu option, the lower part of the screen clears and spell check commences. Words are displayed in the lower half of the screen as they are checked and the checking continues until an unrecognised word is met. You can then either correct spelling using the cursor keys or if it is already correctly spelt (i e. the dictionary does not contain the word), you can force the check to recommence.

You can also add the word to the user dictionary if you so desire. This process is repeated until the end of the text is reached. What surprised me most was the number of unrecognised words. The manual claims that the dictionary contains 30,000 words but simple words such as "quickly", "yourself", "rapidly" and "rushed" were not recognised. Of course, these words may be added to the user dictionary with ease so after a few articles, you should have built up a good dictionary with all your favourite words in it

The most annoying fact about this option is that the system crashed if a word of more than 15 letters cropped up in the text. Now I know reviewers do not tend to use words like "floccinaucinihilipilification" but words like "incomprehensible" are used quite often (especially when referring to manuals in peripheral reviews)

In the two pass option, the text is first scanned through and all unknown words are marked and offered for correction afterwords. This is much quicker but again, the problem with long words exists

One very useful option is the ambiguous word check. This allows you to enter a word with "?" replacing some of the letters. Romspell will then check all combinations of these letters. So this option is extremely useful if you are bad at spelling. It is also possible to check words from Basic and check words as they are typed in but this is slwo and is rather gimmicky.

Overall, the utility worked well and has proved to be useful, especially once the user dictionary has been set up. Once the problem with long words has been solved, I would gladly give this utility a flipped rating. **S.S.**

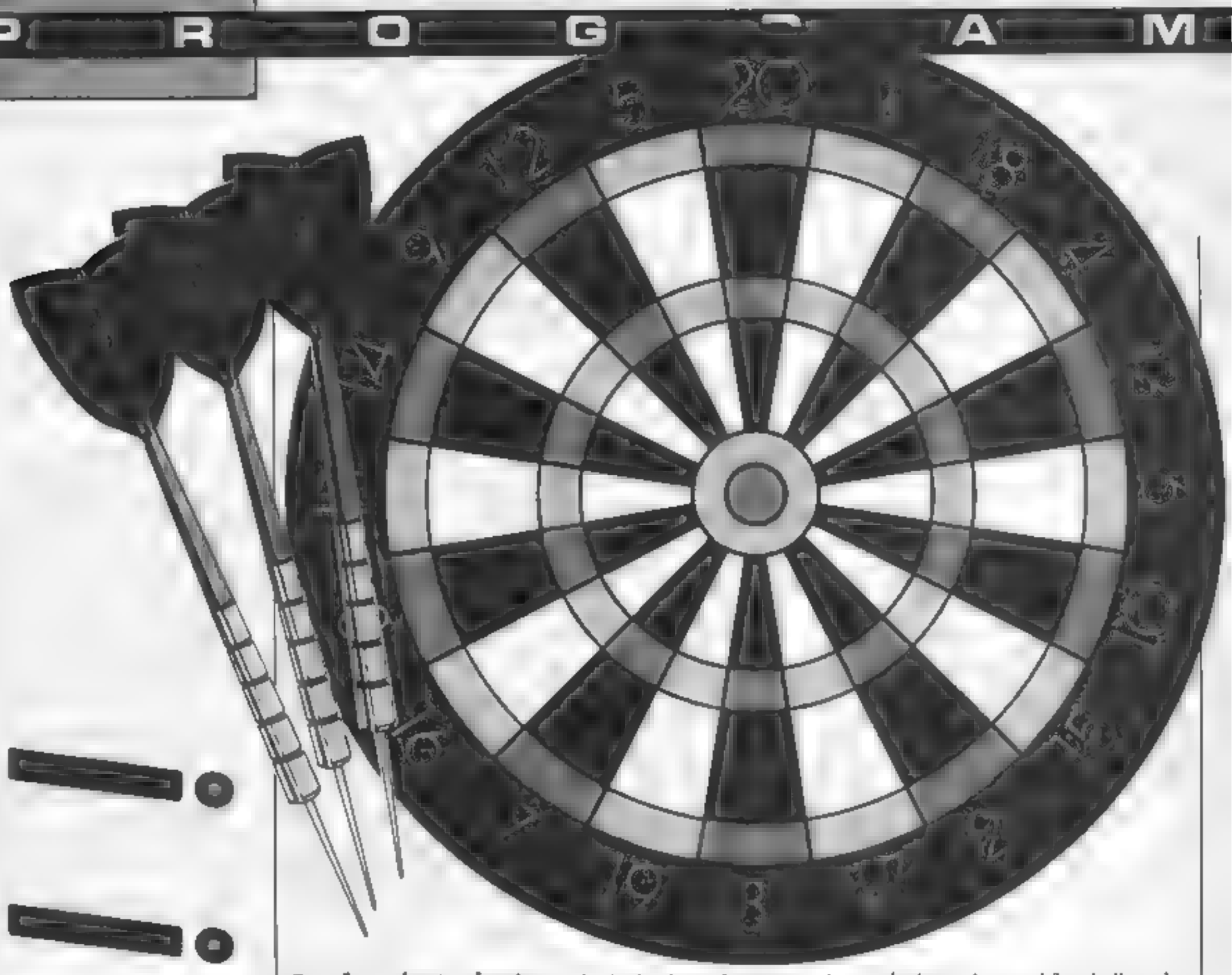
Price: £25.00

Publisher: Watford Electronics

Address: Jessa House, 250 Lower High Street, Watford

PROGRAM

AMSTRAD GAME



180

Go for that elusive double top and the magic 180!! in this darts game for the Amstrad by Stephen Anderson

If you are an arrows fanatic this darts simulation which gives you options to play 501, 301 and 101 games could be what you've been looking for

One or two players can step up to your computerised ocky and there are four different computer players. Aiming is achieved by lining up the top and side pointers and you have to finish with a double or a bull

The screen scorecard tells you which player is next to throw, cumulative total of darts being thrown and the scores of each player. No need for chalk in this game as the micro will do all the calculations for you

Variables

D(),DY() three dart co-ordinates
High,Name$ High score
S1,S2 players score
CO,CO$ computer option
DIF skill
x,y pointers
S,SD keeps score
COX computer x co-ordinates
Z,Y works out score
F general purpose loops

How it works

10-290	title screen	2160-2610	work out score
300-830	game options	2620-2740	end of game
840-1580	draw graphics	2750-2940	make computer throw
1590-1680	vars	2950-3560	instructions
1690-1760	computer players	3570-3660	data for competition scores
1770-1870	prints scores	3670-3770	load option
1880-2040	main loop	3780-3870	save option
2050-2150	change co-ordinates		

```
30 REM START SCREEN
40 REM SET ARRAYS AND HIGH SCORE
50 DIM DX(3)
60 DIM DY(3)
70 HIGH=16:NAM$="BIG JOE"
80 INK 1,24,6:INK 0,0:INK 2,6:INK 3,26
90 BORDER 0
100 PEN 1
110 MODE 1
120 REM PRINT COPYRIGHT AND DRAW TITLE SCREEN
130 LOCATE 12,1:PRINT"CHAMPIONSHIP DARTS"
140 LOCATE 12,2:PRINT"----------"
150 LOCATE 13,6:PRINT"BY.S.S.ANDERSON"
160 PLOT 180,200,3
170 DRAWR 80,10:DRAWR 150,0
180 DRAWR 30,-10
190 DRAWR 60,0
200 MOVER -60,0
210 DRAWR -30,-10
220 DRAWR -150,0
230 DRAW 180,200
240 MOVER 66,10:DRAWR 0, 2
```

PROGRAM

```
250 MOVER 120,0:DRAWR 0,20:MOVER 10,0:DRAWR 0
,-20:MOVER 10,0:DRAWR 0,20
260 FOR F=170 TO 230 STEP 4:PLOT 200,200,2:DR
AW 100,F:NEXT
270 PEN 3:LOCATE 11,23:PRINT"PRESS ENTER TO P
LAY"
    PEN 0
290 LOCATE 1,16:INPUT JOE$
300 REM MAIN OPTION SCREEN
310 INK 1,26:INK 3,18
320 PEN 1
330 BORDER 13:PAPER 0:CLS
340 MODE 1
350 CLS
360 SYMBOL 255,84,40,16,56,56,56,16,16
370 LOCATE 7,1:PRINT STRING$(3,CHR$(255))+"CH
AMPIONSHIP DARTS"+STRING$(3,CHR$(255))
380 LOCATE 7,2:PRINT"---      ----------      -----
"
390 LOCATE 5,6:PRINT"HIGHEST CHECKOUT=";HIGH;
" BY ";MID$(NAM$,1,10)
400 PEN 2
410 LOCATE 1,10:PRINT"Q=UP,A=DOWN,O=LEFT,P=R
IGHT,M=THROW DART"
420 LOCATE 5,12:PRINT"YOU CAN ALSO USE CUSOR
KEYS"
430 LOCATE 5,14:PRINT"OR A JOYSTICK  IF YOU HA
VE ONE"
440 LOCATE 5,16:PRINT"I=INSTRUCTIONS,S=SAVE O
R L=LOAD"
450 LOCATE 1,25:PRINT"
                    "
460 LOCATE 1,25
470 PEN 2
480 INPUT"501,301,101,I,S,L";S1$
490 IF VAL(S1$)=101 THEN S1=101:GOTO 560
500 IF VAL(S1$)=301 THEN S1=301:GOTO 560
510 IF VAL(S1$)=501 THEN S1=501:GOTO 560
520 IF S1$="I" OR S1$="i" THEN 2950
530 IF S1$="L" OR S1$="l" THEN 3580
540 IF S1$="S" OR S1$="s" THEN 3790
550 GOTO 450
560 S2=S1
570 REM COMPUTER OR HUMAN OPPONENT OPTION
580 INK 1,26
590 PEN 3
600 CLS:LOCATE 1,10:PRINT"DO YOU WANT TO PLAY
 A COMPUTER PLAYER":LOCATE 1,11:PRINT"OR DO Y
OU HAVE A FRIEND TO PLAY"
610 LOCATE 1,25:PRINT"
                    "
620 LOCATE 1,25:INPUT"HUMAN PLAYER Y/N";co$
630 IF co$="y" OR co$="Y" THEN co=0:GOTO 830
640 IF co$="n" OR co$="N" THEN co=1:GOTO 670
650 GOTO 610
660 REM WHICH LEVEL OF SKILL YOUR OPPONENT WI
LL HAVE
670 CLS
680 PEN 1:LOCATE 5,10:PRINT"INPUT SKILL LEVEL
"
690 LOCATE 5,12:INPUT"SKILL LEVEL(1-4)";DIF
700 IF DIF<1 OR DIF>4 THEN LOCATE 5,11:PRINT"
                                    ":GO
TO 690
710 IF S1=301 AND DIF=1 THEN RESTORE 3580
720 IF S1=301 AND DIF=2 THEN RESTORE 3590
730 IF S1=301 AND DIF=3 THEN RESTORE 3600
740 IF S1=301 AND DIF=4 THEN RESTORE 3610
750 IF S1=501 AND DIF=1 THEN RESTORE 3630
760 IF S1=501 AND DIF=2 THEN RESTORE 3640
770 IF S1=501 AND DIF=3 THEN RESTORE 3650
780 IF S1=501 AND DIF=4 THEN RESTORE 3660
790 IF DIF=1 THEN SYMBOL 244,28,52,28,8,152,9
2,56,24:SYMBOL 245,24,26,8,8,8,8,8,24:PRO$="C
ERI"
800 IF DIF=2 THEN SYMBOL 244,28,52,28,8,12,22
0,44,12:SYMBOL 245,12,22,43,53,63,20,20,60:PR
O$="JOCK"
810 IF DIF=3 THEN SYMBOL 244,14,26,14,4,204,5
2,4,4:SYMBOL 245,4,15,15,10,10,10,11,25:PRO$=
"MIKE"
820 IF DIF=4 THEN SYMBOL 244,28,52,28,8,28,16
8,92,28:SYMBOL 245,28,28,8,8,15,9,8,24:PRO$="
ERIC"
830 PEN 1
840 REM USER GRAPHICS
850 SYMBOL 240,56,56,56,56,56,56,16,16
860 SYMBOL 241,0,0,240,255,240,0,0,0
870 SYMBOL 242,192,192,224,224,224,224,224,22
4
880 SYMBOL 243,192,192,192,192,192,192,192,19
2
890 REM DRAW BOARD
900 MODE 1
910 ORIGIN 240,192
920 DEG
930 PLOT 165,0,1
940 FOR f=1 TO 370 STEP 12
950 DRAW 0+165*COS(F),0+165*SIN(F)
960 SOUND 1,f,2,4
970 NEXT
980 PLOT 175,0
990 FOR f=1 TO 370 STEP 12
1000 DRAW 0+175*COS(F),0+175*SIN(F)
1010 SOUND 1,f+50,2,4
1020 NEXT
1030 PLOT 110,0
1040 FOR f=1 TO 370 STEP 16
1050 DRAW 0+110*COS(F),0+110*SIN(F)
1060 SOUND 1,f+100,2,4
1070 NEXT
1080 PLOT 100,0
1090 FOR f=1 TO 370 STEP 20
1100 DRAW 0+100*COS(F),0+100*SIN(F)
1110 SOUND 1,f+150,2,4
1120 NEXT
1130 FOR f=9 TO 180 STEP 18
1140 MOVE 0+175*-COS(f),0+175*-SIN(f)
1150 DRAW 0+175*COS(f),0+175*SIN(f)
1160 SOUND 1,f+200,2,4
1170 NEXT
1180 REM DRAW BULL AND OUTER BULL
1190 PLOT 20,0
1200 FOR f=1 TO 370 STEP 10
1210 PLOT 0,0
1220 DRAW 0+20*COS(F),0+20*SIN(F)
1230 SOUND 1,f+250,2,4
1240 NEXT
1250 PLOT 7,0
1260 FOR f=1 TO 360 STEP 10
1270 PLOT 0,0,2
1280 DRAW 0+7*COS(F),0+7*SIN(F)
1290 SOUND 1,f+300,2,4
1300 NEXT
1310 PLOT 0,0
1320 FOR f=1 TO 370 STEP 20
1330 DRAW 0+20*COS(F),0+20*SIN(F)
1340 NEXT
1350 REM PRINT NUMBERS
1360 TAG
1370 PLOT -10,192,1:PRINT"20";
1380 PLOT 45,190,1:PRINT "1";
1390 PLOT 100,164,1:PRINT "18";
1400 PLOT 155,126,1:PRINT "4";
1410 PLOT 180,80,1:PRINT "13";
1420 PLOT 190,8,1:PRINT "6";
1430 PLOT 180,-46,1:PRINT "10";
1440 PLOT 155,-110,1:PRINT "15";
1450 PLOT 110,-150,1:PRINT "2";
1460 PLOT 50,-176,1:PRINT "17";
1470 PLOT 4,-188,1:PRINT "3";
1480 PLOT -84,-180,1:PRINT"19";
1490 PLOT -120,-150,1:PRINT"7";
1500 PLOT -168,-110,1:PRINT"16";
1510 PLOT -190,-50,1:PRINT"8";
1520 PLOT -216,0,1:PRINT"11";
```

```
1530 PLOT -216,60,1:PRINT"14";
1540 PLOT -176,120,1:PRINT"9";
1550 PLOT -150,160,1:PRINT"12";
1560 PLOT -68,190,1:PRINT"5";
1570 MOVE 217,200:DRAWR 0,-400
1580 MOVE 217,0:DRAWR 200,0
1590 REM VARIABLES
1600 X=1:Y=1
1610 S=0:SD=0
1620 FLAG=1
1630 DX(1)=0
1640 DX(2)=0
1650 DX(3)=0
1660 DY(1)=0
1670 DY(2)=0
1680 DY(3)=0
1690 REM PRINTS PLAYER FOR COMPUTER OPTION
1700 COX=270
1710 IF CO=1 THEN PLOT 218,-10,1:PRINT CHR$
(24 :PLOT 218, 116:PRINT CHR$(243);
1720 IF CO=1 THEN PLOT COX,-10 ,1:PRINT CHR$(
244 ;" ";:PLOT COX, 116:PRINT CHR$(245);" ";
1730 IF CO=1 THEN MOVE 270, 1:PRINT FR$;
1740 PLOT 220,200,1:PRINT"PLAYER= ";1;
1750 MOVE 262,180:PRINT 0;
1760 GOTO 1850
1770 REM GETS COMPUTER PLAYERS SCORE
1780 PLOT 220,160,1:PRINT S1;S2;
1790 IF CO=1 THEN GOSUB 2760
1800 IF CO=1 AND S2=50 THEN S2=S2-50:GOTO 182
0
1810 IF CO=1 AND S2=101 THEN S2=S2-S1
1820 IF CO=1 AND S2>101 THEN READ DSC:S2=S2-D
SC
1830 IF CO=1 THEN FLAG=1
1840 REM PRINT PLAYERS SCORE
1850 PLOT 220,160,1:PRINT S1;S2;
1860 PLOT 217,142,1:DRAWR 150,0
1870 PLOT 220,140:PRINT" P.1";"  P.2";
1880 REM MAIN LOOP
1890 FOR F=1 TO 3
1900 PLOT X-16,210,1:PRINT " "+CHR$(240);
1910 PLOT -240,Y,1:PRINT CHR$(241);
1920 IF CO=1 AND FLAG=2 THEN 1780
1930 X=X-(INKEY(27)=0 OR INKEY 75 =0 OR INKEY
(1)=0)*4+(INKEY(74)=0 OR INKEY(74)=0 OR INKEY
(8)=0,*4
1940 Y=Y-(INKEY(67)=0 OR INKEY(72)=0 OR INKEY
(0)=0)*4+(INKEY(69,=0 OR INKEY(73)=0 OR INKEY
(2)=0)*4
1950 IF Y>-1 AND Y 1 THEN Y=1
1960 IF Y>190 THEN MOVE -240,Y:PRINT" ";:Y=19
0
1970 IF Y -180 THEN MOVE -240,Y:PRINT  ";:Y=-
180
1980 IF X -2 THEN X= 20
1990 IF X 20 THEN X=2 0
2000 IF INKEY(26,=0 OR INKEY(76)=0 OR INKEY(9
)=0 THEN SOUND 1,200,2,7,0,,5:GOSUB 2070:GOT
O 202
2010 GOTO 1900
2020 PLOT 220,160,1:PRINT S1;S2;
2030 IF F=3 THEN 1890
2040 NEXT
2050 REM CHANGE X,Y TO POLAR V,Z
2060 X=X+4:Y=Y+4
2070 Z=X*X+Y*Y
2080 Z=SQR(Z)
2090 DX F =X:DY F =Y
2100 PLOT DX(F) ,DY(F ,:DRAWR 4,0
2110 PLOT DX(F),DY(F)+2:DRAWR  , 4
2120 END
2130 MOVE 0,0
2140 IF Y=0 THEN Y=1
2150 C=DX(F) DY(F)
2160 IF DX(F) =0 AND DY F  =  THEN V= PI+ATN(
 C  :GOTO 2230
2170 IF DY(F) 0 AND DY(F) =0 THEN V=(PI+ATN(-
```

```
C) :GOTO 2230
2180 IF DY(F)<0 THEN DY F)=+DY(F :C=(DX(F))/D
Y(F)
219  = PI+ATN(-C))
2200   = PI+ATN -C1)
2210  GOTO 2 0
2220  REM CHECK TOP OF BOARD
2230 IF V =5*PI/2  AND V<=11*PI/20 THEN SD=6
2240 IF V =11*PI _  AND V =13*PI/20 THEN SD=1
0
2250 IF V>=15*PI 20 AND V =15*PI/20 THEN SD=4
2 0  IF V =15*PI 20 AND V =17*PI/20 THEN SD=1
8
22  IF  =17*PI 20 AND V =19*PI/2  THEN SD=1
 8  IF  =19*PI 2  AND V =_1*PI/20 THEN SD=2
0
2 0 IF V =_1*PI _  AND V<=27*PI 2  THEN SD=5
2 0 IF V =27*PI 20 AND V <=25*PI 2  THEN SD=1
2
2 1  IF  =2 *PI/20 AND V =27*PI/2  THEN SD=9
2 0  IF  =27*PI _  AND V<=29*PI/20 THEN SD=1
4
2 0 IF V =_9*PI _  AND  =31*PI/20 THEN SD=1
1
2 0 GOTO 24
2 0  REM CHECK LOWER HALF OF BOARD.BULL.OUTER
 BULL.TRIPLES. DOUBLES e.t.c
2 0 IF V =5*PI 20 AND V =11*PI 2  THEN SD=11
2 0  IF  =11*PI  0 AND V =17*PI 2  THEN SD=8
2 0 IF V =17*PI/2  AND V<=15*PI/20 THEN SD=1
6
2 0  IF  =15*PI 20 AND V<=17*PI/20 THEN SD=7
2 0  IF  =17*PI _  AND V =19*PI/20 THEN SD=1
9
241  IF V<=19*PI _  AND V<=21*PI/20 THEN SD=3
2 0 IF  =_1*PI 20 AND V<=23*PI/20 THEN SD=1
7
2430 IF V>=23*PI/20 AND V<=25*PI/20 THEN SD=2
2 0  IF V>=25*PI/20 AND V<=27*PI/20 THEN SD=1
5
2 0  IF V>=27*PI/20 AND V<=29*PI/20 THEN SD=1
0
2 0  IF V>=29*PI/20 AND V<=31*PI/20 THEN SD=6
2 0  IF Z<20 THEN SD=25
2480  IF Z<7 THEN SD=50:ENT 1,10,-10,20:SOUND
2,400,40,4,0,1:IF S1-(S+SD)=0 OR S2-(S+SD)=0
THEN 2620
2490 IF Z>175 THEN SD=0
2500 IF Z<110 AND Z>100 THEN SD=SD*3:IF S+SD=
180 THEN FOR U=500 TO 100 STEP -5:SOUND 2,U,2
,4:INK 1,(INT(RND*14)+1):NEXT:INK 1,26
2510 IF Z<175 AND Z>165 THEN SD=SD*2:IF S1-(S
+SD)=0 OR S2-(S+SD)=0 THEN 2620
2520  MOVE 262,180:PRINT S+SD;" ";
2530  IF S+SD+1>=S1 AND FLAG=1 THEN S=0:F=3:FL
AG=2:FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:DRAWR
4,0:PLOT DX(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U),
DY(U),1:NEXT:GOTO 2570
2540 IF S+SD+1>=S2 AND FLAG=2 THEN S=0:F=3:FL
AG=1:FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:DRAWR
4,0:PLOT DX(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U)
,DY(U),1:NEXT:GOTO 2570
2550  IF FLAG=1 THEN S=S+SD:IF F=3 AND FLAG=1
THEN FLAG=2:S1=S1-S:FOR U=1 TO 3:PLOT DX(U)-2
,DY U ,0 DRAWR 4,0:PLOT DX(U),DY(U)+2:DRAWR 0
,-4:PLOT D U),DY(U),1:NEXT:S=0:GOTO 2570
2560 IF FLAG=2 THEN S=S+SD:IF F=3 AND FLAG=2
THEN FLAG=1:S2=S2-S:FOR U=1 TO 3:PLOT DX(U)-2
,DY U ,0 DRAWR 4,0:PLOT DX(U),DY(U)+2:DRAWR 0
,-4:PLOT D U),DY(U),1:NEXT:S=0
2570 MOVE 220,200:PRINT"PLAYER=";FLAG;
2580  MOVE X,210:PRINT  ;
2590  MOVE -24 ,Y:PRINT  ";
2600 X=X+20:Y=Y+20
2610  RETURN
2620  REM END OF GAME.PRINT WHO WON
2630 CLS:TWOOFF
2640 PEN
```

PROGRAM

```
2650 LOCATE 5,5:PRINT RESULT
2660 LOCATE 5,6:PRINT"--- --"
2670 IF FLAG=1 THEN LOCATE 5,1 :PRINT PLAYER
1 WIN
2680 IF FLAG=2 THEN LOCATE 5,1 :PRINT"PLAYER
2 WIN"
2690 LOCATE 5,2:PRINT"PRESS ENTER TO CONTINU
E"
2700 ENT ,,,,5,,:FOR F=400 TO 300 STEP -5:S
OUND 1,F,1,5,,:NEXT
2710 PEN 0:LOCATE 1,25:INPUT PHEN$
2720 REM SORT OUT HIGHEST SCORE
2730 IF S+SD HIGH AND CO=0 AND FLAG=1 OR S+SD
>HIGH AND CO=0 AND FLAG=2 OR CO=1 AND S+SD>HI
GH AND FLAG=1 THEN LOCATE 5,15:PEN 1:PRINT"NE
W HIGHEST CHECKOUT=";S+SD:HIGH=S+SD:PEN 1:LOC
ATE 1,25:INPUT"ENTER YOUR NAME";NAM$
2740 GOTO 310
2750 REM MAKES COMPUTER PLAYER THROW
2760 FOR F=1 TO 3:DART=270:WHILE DART>226
2770 PLOT DART,-108,1
2780 PLOT DART+2,-108,0
2790 DART=DART-2
2800 WEND
2810 SOUND 1,200,2,7,0,0,5
2820 NEXT
2830 PLOT DART+2, 108,0
2840 WHILE (COX-16) 226
2850 PLOT COX-16,-100,1:PRINT" "+CHR$(244)+"
":MOVE COX-16,-116:PRINT" "+CHR$(245)+" ":
2860 COX=COX-2
2870 WEND
2880 SOUND 1,200,4
2890 WHILE COX 270
2900 PLOT COX-16,-100,1:PRINT" "+CHR$(244)+"
":MOVE COX-16,-116:PRINT  "+CHR$(245)+" ":
2910 COX=COX+2
2920 WEND
2930 SOUND 1,200,4
2940 RETURN
2950 REM INSTRUCTIONS
2960 PEN 1
2970 CLS
2980 ORIGIN 240,192
2990 DEG
3000 PLOT 165,0,1
3010 FOR f=1 TO 36 STEP 6
3020 DRAW 0+165*COS(F),0+165*SIN(F)
3030 NEXT
3040 PLOT 175,0
3050 FOR f=1 TO 36 STEP 6
3060 DRAW 0+175*COS(F),0+175*SIN(F)
3070 NEXT
3080 PLOT 110,0
3090 FOR f=1 TO 36 STEP 6
3100 DRAW 0+110*COS(F),0+110*SIN(F)
3110 NEXT
3120 PLOT 100,0
3130 FOR f=1 TO 36 STEP 6
3140 DRAW 0+100*COS(F),0+100*SIN(F)
3150 NEXT
3160 FOR f=0 TO 36 STEP 15
3170 MOVE 0,0
3180 DRAW 0+175*COS(f),0+175*SIN(f)
3190 NEXT
3200 PLOT
3210 FOR f=1 TO 360 STEP 6
3220 PLOT 0,0,3
3230 DRAW 0+20*COS(F),0+20*SIN(F)
3240 NEXT
3250 PLOT 7,0,2
3260 FOR f=1 TO 360 STEP 10
3270 PLOT 0,0,2
3280 DRAW 0+7*COS(F),0+7*SIN(F)
3290 NEXT
3300 TAG
3310 PLOT -100,0,1
3320 PRINT"50":DRAW 0,0
3330 PLOT -100,-12,1
3340 PRINT"25":DRAW 15,0
3350 MOVE 32,-50
3360 PRINT"SINGLE "
3370 DRAW 14,8
3380 MOVE 0,100
3390 PRINT"TREBLE":DRAW 96,36
3400 MOVE 195,
 410 PRINT DOUBLE":MOVE 195,0
3420 DRAW 100,4
3430 TAG:F
3440 LOCATE 1,2
3450 PRINT"THIS IS A SIMULATION OF THE GAME D
ARTS."
3460 PRINT"ALL THE USUAL RULES APPLY.
3470 PRINT" U AIM THE DART,MOVE THE TOP POINT
ER"
3480 PRINT AND THE SIDE POINTER WITH THE
3490 PRINT"KEYS SHOWN ON THE TITLE SCREEN SO
THA
3500 PRINT BOTH POINTERS ARE AIMING AT YOUR T
ARGET"
3510 PRINT NOW PRESS THE THROW KEY.THE DART W
ILL
3520 PRINT STICK IN WHERE IT WAS AIMED.
3530 PRINT"YOU MAY FINISH ON BULL OR DOUBLE."
3540 PRINT"PRESS ANY KEY TO CONTINUE"
3550 IF INKEY$="" THEN 3550
3560 GOTO 1
3570 REM DATA FOR 301 GAME
3580 DATA 41,60,60,26,84
3590 DATA 6 ,99,41
3600 DATA 140,6
3610 DATA 180,71
3620 REM DATA FOR 501 GAME
3630 DATA 6 ,60 ,60,81,45,24,60,45,25
3640 DATA 1 ,6 ,60,80,100
3650 DATA 1 ,14 ,6 ,151
3660 DATA 18 ,18 ,-1
3670 REM LOAD HIGHEST OPTION
3680 CLS
3690 LOCATE 7,5:PEN 1:PRINT"PLACE CASSETTE IN
RECORDER AND PLAY":PRINT"PRESS PLAY THEN P
RESS SPACE
3700 WHILE INKEY 4
3710 LOCATE 10,10:PEN 1:PRINT"LOADING HIGH SC
ORE
3720 LOAD" ",31000
3730 HIGH=PEEK(31000)
3740 LOCATE 10,16:PRINT"SCORE LOADED"
3750 NAM$="NEW HIGH"
3760 FOR F=1 TO 2000:NEXT
3770 GOTO 340
3780 REM ROUTINE FOR SAVE OPTION.(SCORE IS SA
VED IN ADDR(31000))
3790 CLS
3800 LOCATE 1,5:PEN 1:PRINT"PLACE BLANK CASSE
TTE IN RECORDER":LOCATE 5,7:PRINT"PRESS RECOR
D AND PLAY THEN PRESS SPACE"
3810 WHILE INKEY(47)<>0:WEND
3820 LOCATE 10,10:PEN 1:PRINT"SAVING HIGH SCO
RE"
3830 POKE 31000,HIGH
3840 SAVE"",B,31000,1
3850 LOCATE 10,16:PEN 1:PRINT"HIGH SCORE SAVE
D"
3860 FOR F=1 TO 2000:NEXT
3870 GOTO 340
```

BBC B PROGRAM

SHIELD

SUPER

There's action galore in this new version of an old favourite from BBC programming HCW regular Stephen Gray

Take the controls of the Shield craft to protect the humanoid inhabitants of Keta VII from death at the hands of the evil Grounders. You must shoot hte Grounders before they reach the ground, or a human will be lost. Avoid crashing into Grounders, space mines or the ground.

As the game progresses you get more Grounders to shoot down and more space mines to crash into. The game ends when you have lost either 3 ships or 3 humans

Controls

A — up, Z — down, SHIFT — forward, RETURN — fire, SPACE — reverse direction

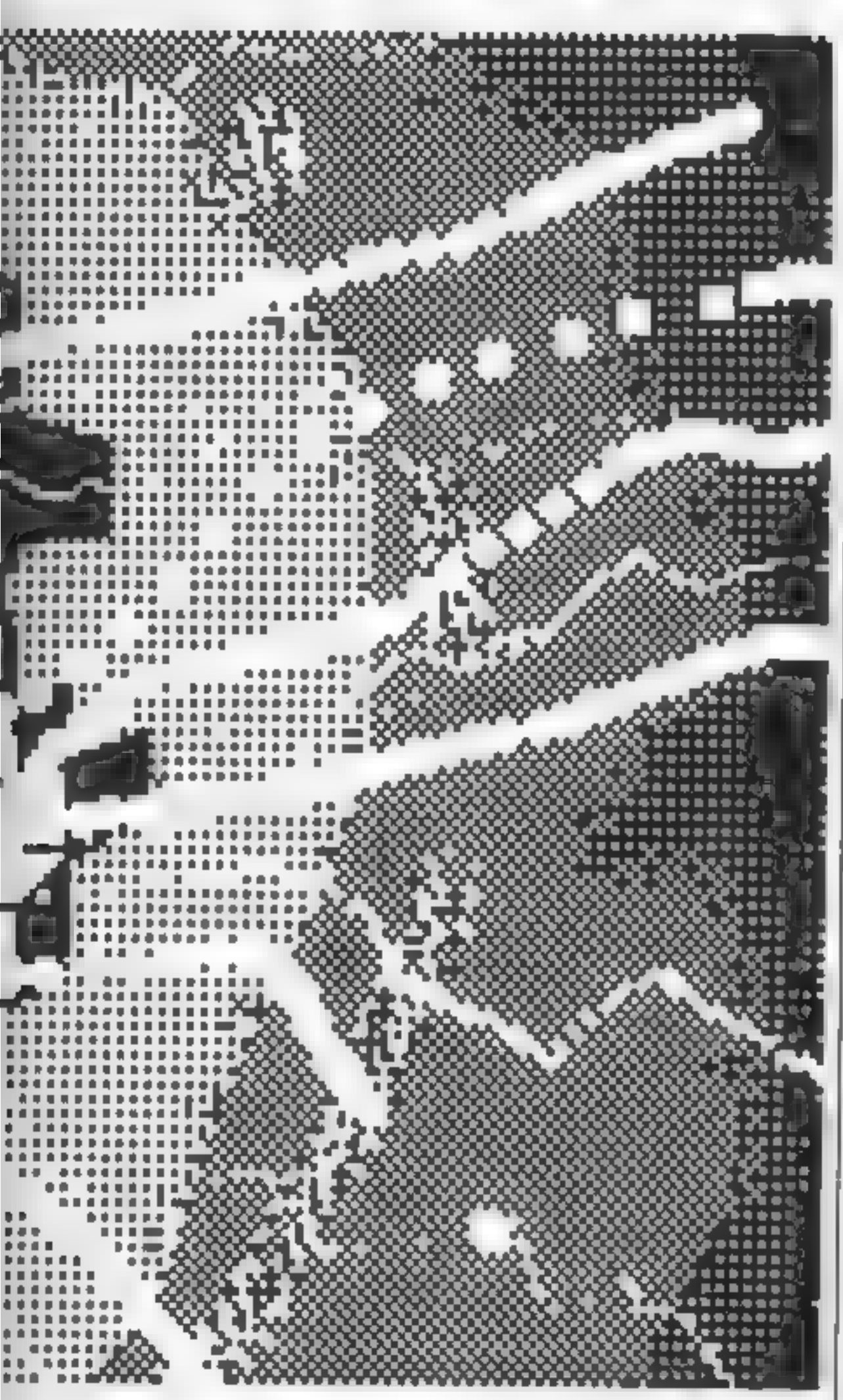
Variables

S% score
L1% ships left
G% Grounders to kill on that level
N% humans left
D% has a ship been destroyed?
H% Grounders killed on that level
GOT% has a Grounder got a human?
X%,Y% Shield craft co-ordinates
J% is Shield craft facing left or right?
M% did Shield craft move, if so in which direction?
MX%,MY% Shield craft last co-ordinates
FX%,FY% co-ordinates of laser beam
FN% Temporary X co-ordinate of laser beam
GX%(10),GY(10)% co-ordinates of Grounders array
H%(5) high scores array
N$(5) high scorers' names array
V% rank
L$,R$ Shield craft
B$ space mine
H$ human
F$ cross

How it works

70-110 initialisation
120-190 main loop
200-380 Shieldcraft procedure
390-470 fire laser procedure
480-780 Grounders procedure
790-960 initialisation procedure
970-1000 new level procedure
1010-1150 Grounder got a human procedure
1160-1400 high scores
1410-1490 dead procedure
1500-1610 music procedure
1620-1640 end of game, restart
1650-1730 instructions procedure

```
 70 ON ERROR PROCMESS
 80 MODE7:PROCINSTRUCT:PROCINIT:PROCmusic
 90 S%=0:LI%=3:G%=1:N%=3
100 ?N=0
110 MODE2:PROCSCREEN
120 *FX14,4
130 PROCSHIP
140 IF D%=1 PROCDEAD:IF LI% GOTO 110
150 IF D%=1 GOTO 1630
160 IF H%=G% PROCLEVEL:GOTO 110
170 PROCGROUNDER
180 IF N%=0 GOTO 1630
190 IF GOT% GOTO 110
200 GOTO 130
210 DEF PROCSHIP
220 MX%=X%:MY%=Y%:M%=0
230 IF POINT(X%+32,Y%-8) THEN D%=1:ENDPROC
240 IF INKEY(-98) AND Y%<32 Y%=Y%-64:M%=1
250 IF INKEY(-66) AND Y% 928 Y%=Y%+64:M%=1
260 IF INKEY(-1) X%=X%+J%*64:M%=1
270 IF INKEY(-99) J%=-J%:M%=2
280 IF INKEY(-74) PROCFIRE(MX%+(J%+1)*64-64
,MY%-16)
290 IF X% 0 X%=0
300 IF X% 1216 X%=1216
```



```
  310 IF M%=0 ENDPROC
  320 MOVE MX%,MY%
  330 IF J%=1 AND M%=1 PRINT R$
  340 IF J%=1 AND M%=2 PRINT L$
  350 IF J%=-1 AND M%=2 PRINT R$
  360 IF J%=-1 AND M%=1 PRINT L$
  370 MOVE X%,Y%:IF J%=1 PRINT R$ ELSE PRINT
L$
  380 IF POINT(X%+32,Y%-8) THEN D%=1
  390 ENDPROC
  400 DEF PROCFIRE(FX%,FY%)
  410 FS%=FX%
  420 REPEAT:FX%=FX%+J%*64:UNTIL POINT(FX%+32
,FY%) OR FX%>1280 OR FX%<0
  430 MOVE FS%,FY%:GCOL3,3:DRAW FX%,FY%
  440 SOUND3,2,150,5
  450 FOR A=1 TO 10:IF FX%=GX%(A) AND FY%=GY%
(A)-16 SOUND 0,-15,2,2:H%=H%+1:MOVEGX%(A),GY%
(A):PRINTG$:GX%(A)=-10000:S%=S%+10:VDU4:PRINT
TAB(0,1);S%:VDU5
  460 NEXT
  470 MOVE FS%,FY%:GCOL3,3:DRAW FX%,FY%
  480 ENDPROC
  490 DEFPROCGROUNDER
  500 FORA=1TO6%
  510 MOVE GX%(A),GY%(A):PRINTG$
  520 IF RND(2)=1 GY%(A)=GY%(A)-32
  530 B=RND(2)
  540 IF B=1 AND GX%(A)>0 GX%(A)=GX%(A)-64 EL
SE IF GX%(A)<1216 GX%(A)=GX%(A)+64
  550 MOVE GX%(A),GY%(A):PRINTG$
  560 IF GY%(A)=32 AND GX%(A)>0 PROCGET(GX%(A
)):GOT%=1
  570 NEXT
  580 ENDPROC
  590 DEF PROCSCREEN
  600 VDU23;8202;0;0;0;
  610 FOR A=1 TO 15:VDU19,A,0;0;:NEXT
  620 Y=RND(300)DIV16*16:MOVE 0,Y:MOVE 0,0:GC
OL0,(G%-1)MOD7+1
  630 FOR X=0 TO 1280 STEP 16
  640 A=RND(2):IF A=1 AND Y>100 Y=Y-16 ELSE I
F Y<300 Y=Y+16
  650 PLOT 85,X,Y:PLOT 85,X,0
  660 NEXT
  670 COLOUR 6:PRINT"SCORE  SHIPS  HUMANS"
  680 COLOUR 7:PRINTTAB(0,1);S%;TAB(7,1);STRI
NG$(LI%-1,R$);TAB(14,1);STRING$(N%,H$)
  690 VDU5
  700 FOR X=0 TO 1216 STEP64:MOVEX,32:PRINTH$
:NEXT
  710 FOR A=1 TO 10:GX%(A)=-10000:NEXT
  720 B%=0:X%=0:Y%=544:J%=1:FOR A=1 TO G%:GX%
(A)=RND(19)*64:GY%(A)=RND(8)*32+640:MOVEGX%(A
),GY%(A):PRINTG$:NEXT
  730 H%=0:GOT%=0
  740 FOR A=1 TO G%*4
  750 A%=RND(19)*64:B%=RND(28)*32:IF POINT(A%
+32,B%-16)GOTO 750 ELSE MOVE A%,B%:PRINTB$
  760 NEXT
  770 MOVE X%,Y%:PRINTR$
  780 FOR A=1 TO 15:VDU19,A,A;0;:NEXT
  790 ENDPROC
  800 DEF PROCINIT
  810 @%=6
  820 DIMH%(5),N$(5),GX%(10),GY%(10):FOR A=1
TO 5:H%(A)=100:N$(A)="Grayface":NEXT
  830 S%=0:PROCHIGH
  840 VDU23,225,1,1,3,31,127,127,0,0,23,226,6
0,126,90,126,126,60,24,102,23,227,28,28,28,8,
62,8,20,34,23,228,24,24,60,255,255,0,0,0,23,2
29,0,0,60,60,60,60,60,60,23,230,240,240,192,1
92,192,192,0,0
  850 VDU23,224,128,128,192,248,254,254,0,0
  860 VDU23,255,255,255,255,255,255,255,255,2
55
  870 VDU 23,254,129,66,36,24,24,36,66,129
  880 L$=CHR$18+CHR$3+CHR$7+CHR$225
  890 R$=CHR$18+CHR$3+CHR$7+CHR$224
  900 B$=CHR$18+CHR$3+CHR$4+CHR$229+CHR$8+CHR
$18+CHR$3+CHR$1+CHR$230
  910 G$=CHR$18+CHR$3+CHR$2+CHR$226
  920 H$=CHR$18+CHR$3+CHR$9+CHR$227
  930 E$=CHR$18+CHR$0+CHR$0+CHR$255+CHR$8+CHR
$18+CHR$0+CHR$3+CHR$254
  940 ENVELOPE1,1,0,0,0,1,1,1,120,-1,-1,-1,12
0,60
  950 ENVELOPE2,1,-1,-1,-1,10,10,10,120,-4,-4
,-4,120,0
  960 ENVELOPE3,1,0,0,0,1,1,1,90,-1,-1,-1,90,
30
  970 ENDPROC
  980 DEF PROCLEVEL
  990 G%=G%+1
 1000 FOR B=1 TO 10000:NEXT
 1010 ENDPROC
 1020 DEF PROCGET(X%)
 1030 *FX13,4
 1040 *FX15
 1050 ?N=0
 1060 MOVE X%,32:PRINTG$;CHR$8;H$
 1070 FOR Y=32 TO 928 STEP32
 1080 MOVE X%,Y:PRINTG$;CHR$8;CHR$10;H$
```

PROGRAM

```
 1090 FOR A=1 TO 100:NEXT A
 1100 MOVE X%,Y:PRINTG$;CHR$8;CHR$10;H$
 1110 NEXT
 1120 N%=N%-1
 1130 MOVE X%,Y:PRINTE$
 1140 SOUND 0,1,5,5
 1150 FOR A=1 TO 10000:NEXT
 1160 ENDPROC
 1170 DEF PROCHIGH
 1180 IF S%<=H%(5) GOTO 1320
 1190 PRINT'''TAB(4);CHR$129;CHR$141;"WELL D
ONE !"'TAB(4);CHR$130;CHR$141;"WELL DONE !"
 1200 V%=0
 1210 REPEAT V%=V%+1:UNTIL S%>H%(V%)
 1220 PRINT'''TAB(4);CHR$131;CHR$141;"YOUR S
CORE IS RANKED "V%'TAB(4);CHR$133;CHR$141;"Y
OUR SCORE IS RANKED "V%
 1230 PRINT'''CHR$132;CHR$141;TAB(6)"ENTER Y
OUR NAME"'CHR$132;CHR$141;TAB(6)"ENTER YOUR N
AME'
 1240 PRINT'''CHR$134;TAB(6);"] ";
 1250 FOR A=5 TO V% STEP-1:N$(A)=N$(A-1):H%(A
)=H%(A-1):NEXT
 1260 H%(V%)=S%:N$(V%)=""
 1270 A=GET:IF A=127 AND N$(V%)="" VDU7:GOTO1
270
 1280 IF A=127 N$(V%)=LEFT$(N$(V%),LENN$(V%)-
1):VDUA:GOTO1270
 1290 IF A=13 GOTO 1320
 1300 IF LENN$(V%)>19 VDU7:GOTO 1270
 1310 N$(V%)=N$(V%)+CHR$(A):VDUA:GOTO1270
 1320 CLS
 1330 VDU134,157,13,10
 1340 FOR A=1 TO 2:VDU134,157,132,141:PRINTTA
B(8)"D I F E N D O R":NEXT
 1350 VDU134,157,13,10
 1360 PRINTCHR$129;TAB(12);"by Stephen Gray"
 1370 FOR A=1 TO 5:PRINT'CHR$141;A;,H%(A);"
 ";N$(A)'CHR$141;A;,H%(A);"     ";N$(A):NEXT
 1380 PRINT''CHR$133;TAB(8)"Press <SPACE> to
start";
 1390 *FX15,1
 1400 REPEAT UNTILINKEY(0)=32
 1410 ENDPROC
 1420 DEF PROCDEAD
 1430 *FX13,4
 1440 *FX15
 1450 ?N=0
 1460 MOVE X%,Y%:PRINTE$
 1470 SOUND 0,1,6,20
 1480 L1%=L1%-1
 1490 FOR B=1 TO 5000:NEXT
 1500 ENDPROC
 1510 DEF PROCmusic
 1520 ?&220=0:?&221=9:?&71=0:?&70=0:N=&70:P=&
A0:Pp=&84:?&80=1:?&81=0:?&82=3:?&83=0:M=74
 1530 FOR PASS=0 TO 2 STEP 2
 1540 P%=&900
 1550 [OPT PASS
 1560 LDA#&80:LDX#250:LDY#&FF:JSR&FFF4:TXA:BE
Q L:LDX N:LDA P,X:STA Pp:LDA P+1,X:STA Pp+2:J
MP Not.L RTS:.No LDX#&80:LDY#0:LDA#7:JSR&FFF1
:INC N:INC N:LDX N:LDA N:CMP#M:BEQ No:RTS:.No
 LDA#0:STA N:RTS
 1570 ]
 1580 NEXT
 1590 RESTORE 1610
 1600 FOR A=0 TO 72 STEP2:READ F,H:A?P=F:A?(P
+1)=H*4:NEXT
 1610 DATA 33,2,41,1,45,2,33,1,45,1,33,1,45,1
,53,2,41,5,45,1,41,2,33,2,41,1,33,1,25,1,21,1
,25,2,13,5,33,2,41,1,45,2,33,1,45,1,33,1,41,1
,45,2,53,2,41,1,53,1,61,1,81,1,73,2,65,2,61,3
,53,1,41,2,33,5
 1620 ENDPROC
 1630 MODE7
 1640 PROCHIGH
 1650 GOTO 90
 1660 DEF PROCINSTRUCT
 1670 FOR A=1 TO 2:PRINTCHR$131;CHR$141;TAB(1
2)"DIFENDOR":NEXT
 1680 PRINT'"  Take the controls of the Difen
dorcraftto protect the Human inhabitants of K
etaVII from death at the hands  of the evilGr
ounders."
 1690 PRINT'"  You must shoot the grounders b
efore   they reach the ground , without crash
inginto anything. As the game progresses , yo
u get more and more grounders to shootdown an
d more space mines to crash into."
 1700 PRINT'CHR$130;"KEYS"''CHR$131;"A-up  Z-
down  SHIFT-thrust"''CHR$131;"RETURN-fire   S
PACE-reverse"
 1710 PRINT'CHR$133;"Press SPACE";
 1720 *FX15
 1730 REPEAT UNTIL INKEY(0)=32
 1740 ENDPROC
 1750DEFPROCMESS
 1760READ A
 1770PRINTCHR$(A);
 1780GOTO 1760
 1790ENDPROC
 1800 DATA 82,69,65,68,32,80,67,87
```

C64 GAME

HIGH FLIER

Those bolshy bacteria the Ballbarians are back in the sequel to High Flier (HCW 122). Their microscopic misdeeds continue in this game for the C64 by Gavin Adair

The Ballbarians, a small germ which lives in the outer atmosphere, have developed an immense underground factory beneath the Earth's surface. The plan — to build millions of robot joysticks to take over the world. The Ballbarians cannot travel outside Earth's outer atmosphere, and so they have to project themselves into the factory using immense mental energy.

The alien Victerians, being kind beasts decided to help the Earthlings and sent their best secret agent to try and stop the factory. He was armed with 25 mental energy shields. These shields would have to protect him against many different types of mental projections and conveyor belts full of droid joysticks.

The Ballbarians got wind of the Victorian plan, and they took steps to stop the special agent. They made the walls completely radioactive to kill any life form that came in contact with them. Can you help special agent Ghost?

Your Victorian is armed with 25 mental energy shields per cave. When your Victorian is hit by a mental projector he will lose one shield (this will cause a time disorder and the screen will flicker). When all shields are lost you will lose one life.

To enter, type in part 1, save it and then type in part II and save it immediately after part I. Some lines between 9500-9839 will need to be entered using keyword abbreviations.

Move the joystick (in port II) in the desired direction to collect the first factory control crown. Only touch this when nothing else is possible as it could cause you to lose shields, then move your Victorian agent to the second crown, collect this and you will move onto the next section of the factory (there are 3 in all).

If you own a Currah speech unit, you may wish to use it with the game, just press "F7" on the title screen to activate the speech. "F5" will de-activate

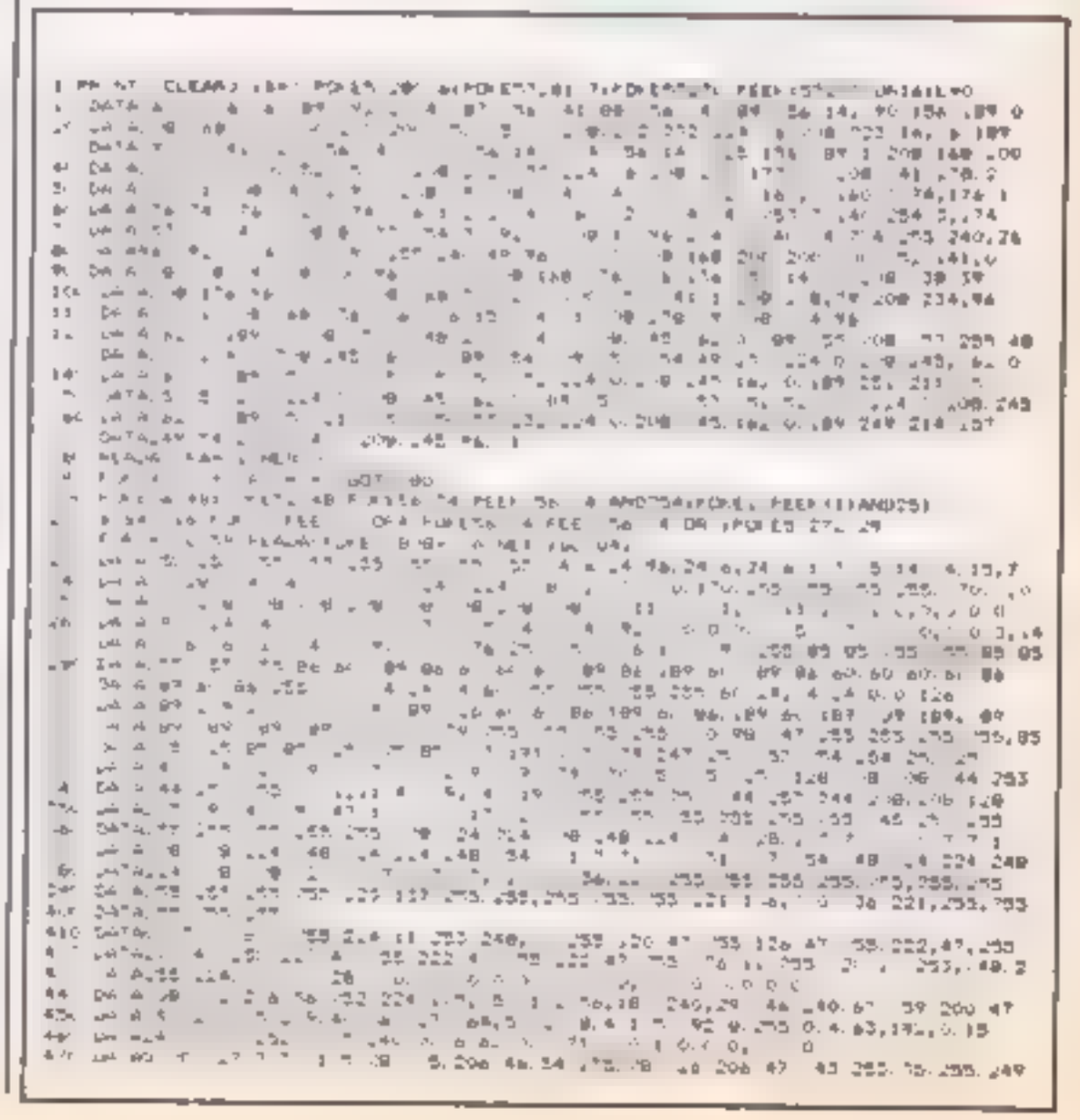
Control of the volume of sound effects, speech, and music during the game is possible by pressing "F3" during the title screen.

How it works

6-9 music data
10 redefine character set
30-50 speech
110-200 music data
660-870 title screen
1000-1056 defines screen
1070-1100 main routine
2500-2650 used for music routines
5000-5020 touched something
9000-9150 draw border
9500-9839 screen data
10000-10130 death routine
20000-20050 game over routine

Variables

I,X,B,A general program variables
S,SP$,a speech variables
W volume control
S V comp (53248)
P,K programme flags
L current level
HI$ used for speech
X X position of crown



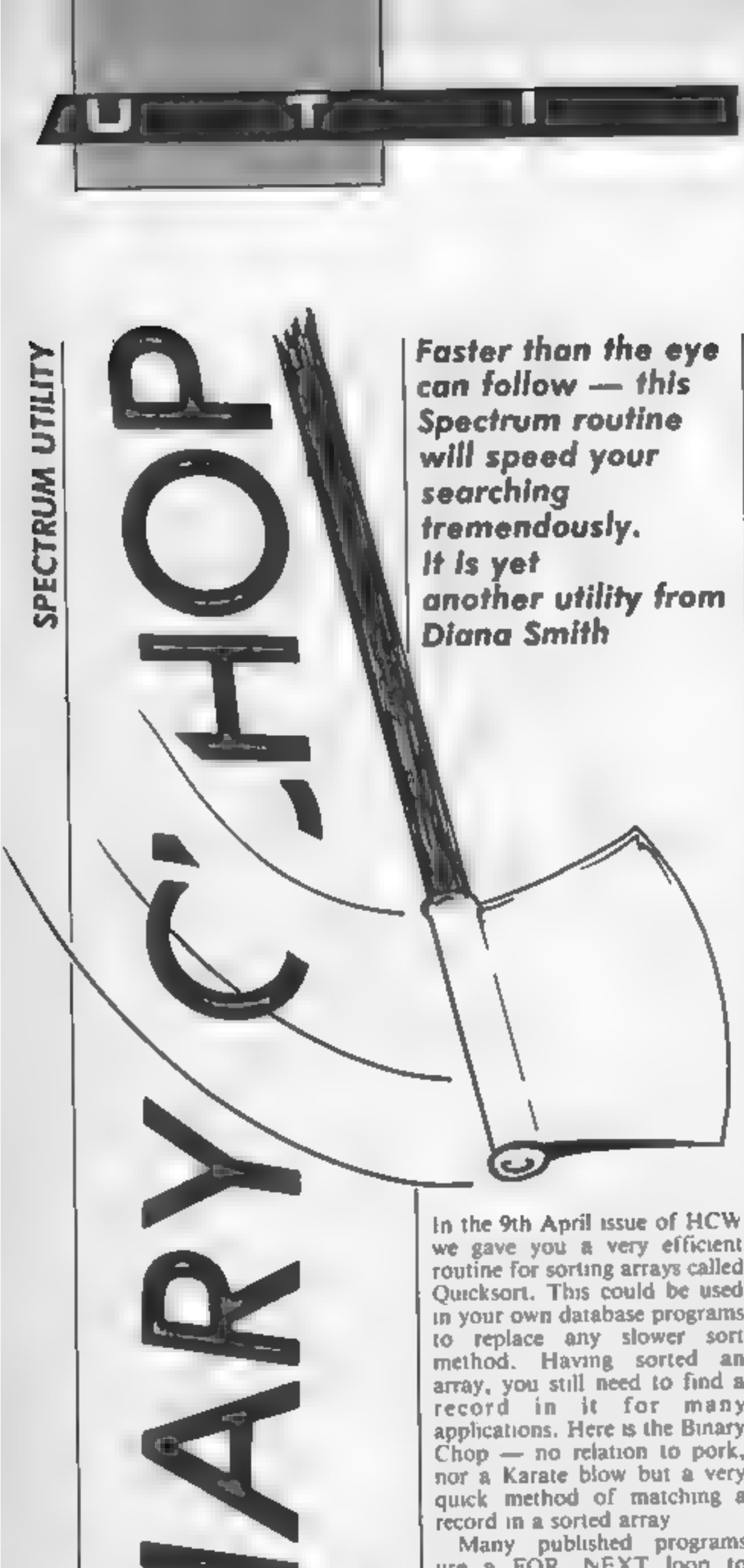
PROGRAM

```
480 DATA14 123  3 72 84  7  ,1,138 0 99  ?  0 ,?  0 3  5  0,?,,41 0 ? 201 0.?
490 DATA77     ?1,  ?8 0 8,  8 0 97 0 ?,  ?  0       0 3
500 DA A?  ?0 0.0.  ?                 ?  ,?50.,      ?          ?50
5 0 DATA0 ,50 0.  0 85.  50 3  87 88.  49 8   , 4 149.85 ,A   49 8?  40  49 ?   A?
520 DA A37 87 88 3  85  40 0.  70 0,?  ,0    , 0
530 DATA0 8,? 0 8,?.?  ?8 0,84 127 ,,97 ,?A.193,,14 ,0  ?  ,  ,  ?  ?
540 DATA82 80.?  8,   24 18 247  48 ?.  ,,  ,5  8  4    8              ,  ,
550 DATA,47,240 ? 255 ,40.     ??  92    ?.  ?  0.
560 DA 80 148 0 ,    . 0 , ? 8 128.,  37, ?8 , ??  ?    ?                    ?
570 DATA120.,  ??  ,?8 2,255. ?8,0.?    ?,  ,  ?  ,  ?  ?  ?
580 DATA191 ,55 22?  ?1 ,??  ,,,  ?,  ??  ?          ?1    ?  ,  ,,
590 FOR I= 47?0TO;47B2 READ,A:POKE  A NEXT
600 FOR I=14 B4?0:4846 READ,A POKE  A NEXT
610 FOR I= 4B48TO 49,? READA POKE  A NEXT
620 FOR =,49,,10 4974 READA  POKE  A NEXT
630 FOR = 497&TO ?0 B:READA POKE, A:NEXT
640 FOR,=,?04 TO ?;  :READA POKE  A:NEXT
650 PRINT"{CLEAR}":CLR:PRINT"{HOME}  PRESS SHIFT RUNSTOP TO LOAD PART 2":NEW



1 PR NT  CL&AR} :&P=: POKE53?8?,0:POKE53?9, ?:POKE?D?A?,?:POKE?D?B?,?:POKE?D?C?,?:POKE?D?D?,?:POKE?D?E?,?:POKE?D?F?,?:POKE?D?0?,?:POKE?D?1?,?:POKE?D?2?,?:POKE?D?3?,?:POKE?D?4?,?:POKE?D?5?,?:POKE?D?6?,?:POKE?D?7?,?:POKE?D?8?,?:POKE?D?9?,
```

PROGRAM



Faster than the eye can follow — this Spectrum routine will speed your searching tremendously. It is yet another utility from Diana Smith

In the 9th April issue of HCW we gave you a very efficient routine for sorting arrays called Quicksort. This could be used in your own database programs to replace any slower sort method. Having sorted an array, you still need to find a record in it for many applications. Here is the Binary Chop — no relation to pork, nor a Karate blow but a very quick method of matching a record in a sorted array

Many published programs use a FOR...NEXT loop to check each record in a file until a match is found. If the record you want is at the opposite end of the file from which you start checking, you can have a long wait!

Binary chop works like this. Suppose you want to find a phone number for Smith in a telephone directory. You open the directory halfway and might find names beginning with H. You can immediately ignore the first half of the directory Look halfway through the remaining pages and you might find names beginning with P. Smith is then in the last quarter of the directory. Look halfway

```
  1 REM BINARY-CHOP
      TEST PROGRAM
 10 DEF FN t()=(65536*PEEK 2367
4+256*PEEK 23673+PEEK 23672)/50
 999 REM Generate array
1000 CLS : INPUT "Enter number o
f records. ";records
1010 DIM a$(records,4)
1020 FOR n=1 TO records
1030 LET a$(n)=("000"+STR$ n)(LE
N STR$ n TO )
1040 PRINT "Record ";n;" = ", IN
VERSE 1;a$(n)
1050 POKE 23692,255: NEXT n
1999 REM Search requirement
2000 DIM m$(4)
2010 INPUT "Enter a 4 character
number with leading zeroes. ";m$
( TO 4)
2999 REM Sequential search
3000 CLS : LET start=FN t()
3010 PRINT "Sequentially searchi
ng for      record "; INVERSE 1;
m$
3020 LET matchfound=0: LET c=0
3030 FOR n=1 TO records
3040 LET c=c+1: IF m$=a$(n) THEN
  LET matchfound=1: GO TO 3060
3050 NEXT n
3060 LET stop=FN t()
3070 LET time=stop-start
3080 PRINT "Match ";("not " AND
matchfound=0);"found";'c;" check
s in ";time;" seconds";''''
3999 REM Binary chop
4000 LET start=FN t()
4010 PRINT "Binary-chop search f
or record   "; INVERSE 1;m$
4020 LET upperlimit=records
4030 GO SUB 9000
4040 LET stop=FN t()
4050 LET time=stop-start
4060 PRINT "Match ";("not " AND
matchfound=0);"found";'c;" check
s in ";time;" seconds"
4999 REM Repeat?
5000 INPUT "Another test (y/n)?
";b$
5010 IF b$="y" THEN  RUN
5020 STOP
8999 REM Binary-chop
9000 LET lowerlimit=1
9004 LET c=0
9005 LET c=c+1
9010 IF upperlimit<lowerlimit TH
EN  LET matchfound=0: RETURN
9020 LET i=INT ((upperlimit+lowe
rlimit)/2)
9030 IF m$<a$(i) THEN  LET upper
limit=i-1: GO TO 9005
9040 IF m$>a$(i) THEN  LET lower
limit=i+1: GO TO 9005
9050 LET matchfound=1: RETURN
```

through this and you may find the W's, so you then look halfway between the P's and the W's.

By this time you have eliminated seven-eighths of the directory in only three checks Repeat this until you find the Smiths and you can then start checking initials by the same method until you find the number or establish that it is not in the directory.

This method of eliminating half the possible choices each time is very efficient, especially for large numbers of records The bracketed figures in Table I demonstrate this.

The program listing allows you to compare the times of a sequential search and a binary-chop search. It first sets up an ordered array, does a sequential search and reports the time taken and the number of checks done. It then repeats the search using the binary-chop routine

Key in the program, press RUN and ENTER and answer the prompts. You may like to try to reproduce the timings given in Table I which show how quick the binary-chop can be, especially for large arrays Indeed, for small arrays, it is only the combination of the sequential search being earlier in the program and using a FOR...NEXT loop that makes it faster than the binary-chop subroutine with its slow GOTO statements.

The match string was chosen as the "middle-plus-one" record to represent an average search without allowing binary-chop to find it on its first pass.

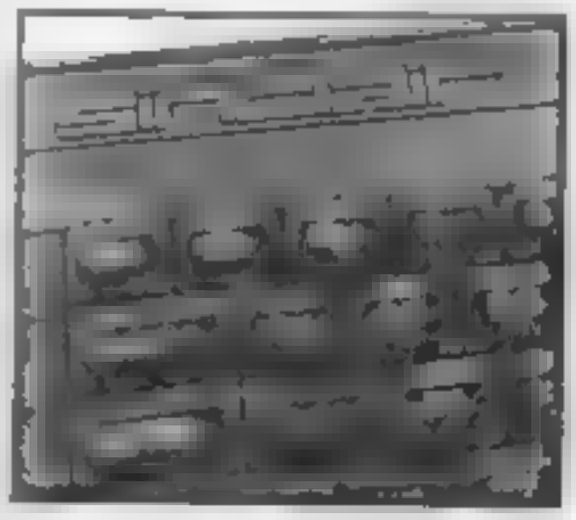
The binary-chop subroutine, starting at line 9000, can be easily modified for use in your own programs Delete lines 9004 and 9005 as they will be unnecessary. Remember to set the variable "upperlimit" equal to the highest record number before calling the routine. If the routine returns with "match-found" equal to 1, the match will be found at record "i" ■ the array

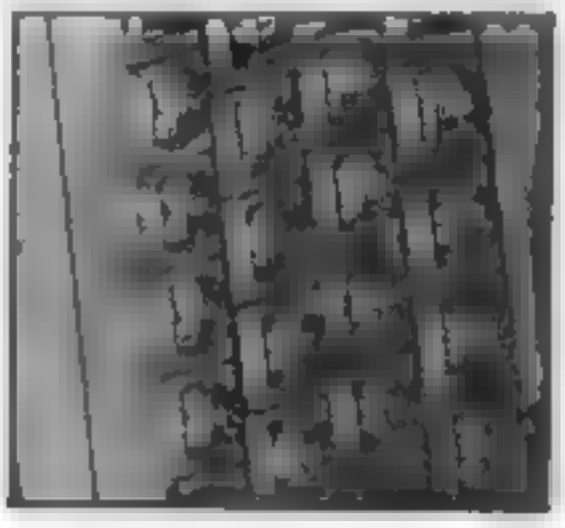
For those speed-freaks who find this routine too slow in Basic, I can supply a machine-code version if you send £1.00 plus a large S.A.E. to me at 7 Curlew Drive, Hythe, Hants SO4 6GB

Table I

Comparison of sequential and binary-chop searches. Bracketed figures give the number of checks made during the search

Records	Match string	Search time (seconds) Sequential Search	Binary-Chop
5	0004	0.14 (4)	0 16 (2)
50	0026	0.5 (26)	0.3 (5)
500	0251	4.26 (251)	0.42 (8)
5000	2501	41.3 (2501)	0 62(12)





Hints for conversion

The binary-chop subroutine (lines 9000 on) should pose no problems

The DEF FN in line 10 calculates the time in seconds from the computer's clock

The POKE in line 1050 scrolls the print up the screen

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VISA

LETTERS

In search of space

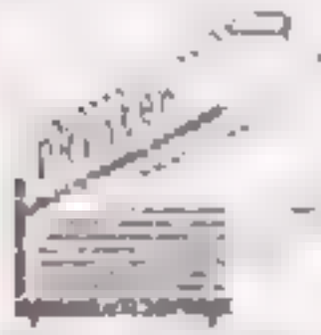
On finding great difficulty in regards to space for the printing paper behind the printer and to stop the paper getting tangled up, I made up a base where I put the printer on top and paper inside. The paper is now automatically fed to the printer and is very successful with a nice bit of space saved.

I enclose this to make up form for any reader to make up and use if they wish. But they must use their own measurements according to their printer base size, as the sizes I have on the drawings are for my printer, which is an Epson RX-80 F/T, and if any reader requires any more information or whatever, I will be only too glad to help.

Also may I say thanks for such a wonderful mag as it really gives me very great pleasure to read it.

Stan Fowell, Dagenham

What a great idea — please could you design an ideal editor's desk? **Dave**



Another bouquet

Having purchased my Amstrad 464 in July I was pretty impressed with its performance. Then about four months ago, it seemed to READ ERROR B while loading and sometimes the cassette would [illegible]. Dixons guarantee [illegible]. A simple [illegible] thought, but it was [illegible] five weeks before it was returned [illegible] was beginning to suffer withdrawal symptoms [illegible] I rushed it home, unpacked it and it worked perfectly. Worth waiting for you might think, as I did, but imagine my horror when I found that the front of the casing beneath the cassette hood had been broken to gain access to the controls. Returning to Dixons, where the assistant agreed it was a "poor show", I asked that the cover be replaced as quickly as their engineer was already [illegible] whole [illegible]. When I complained that [illegible] months of my guarantee period had elapsed while the computer was in their workshop, I was informed that there would be three months [illegible] Congratulations Dixons [illegible]

Ray Phillips, Sunbury on Thames

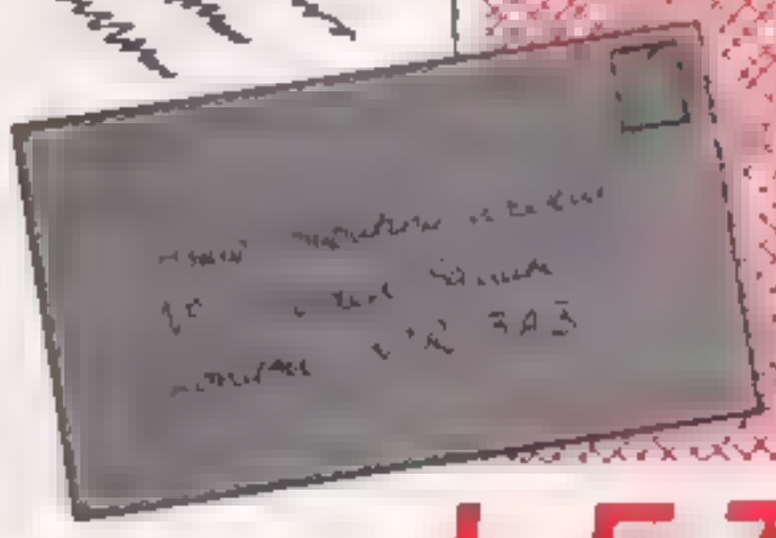
We hear enough sob stories about poor service. If

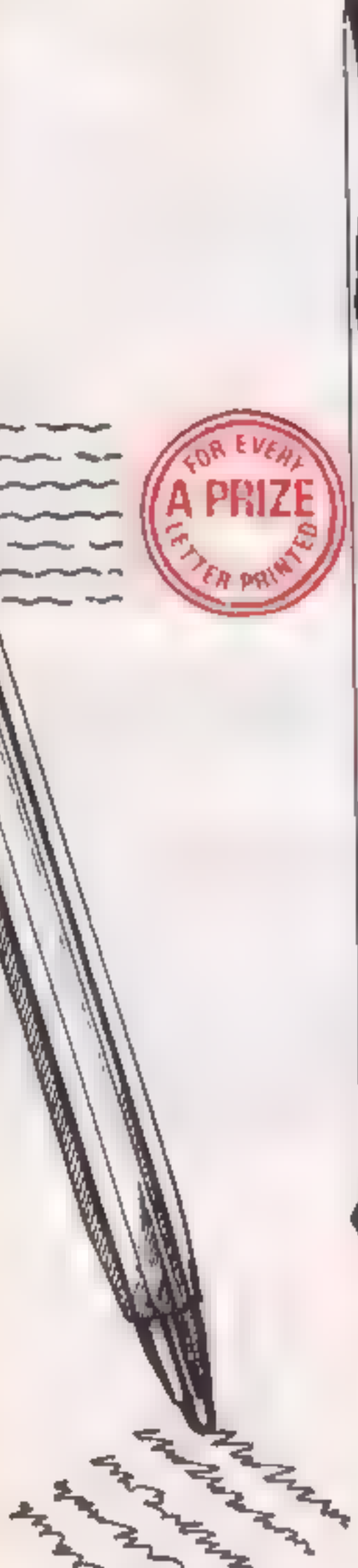
Variety for VIC

[illegible] VIC 20 [illegible] software [illegible] Master [illegible] VIC 20 [illegible] best.

David Bashen, Twickenham

We are surprised at the number of VIC programs we sell [illegible] — so there must be plenty of VIC owners out there.





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Readers hi-score table

Name	Game	Machine	Score
P & G Gibney	Hypersports	Spectrum	210,540
Paul McMaster	Roland Goes Digging	Amstrad	£587.85
	Pyjamarama	Amstrad	98% completed
	Mutant Monty	Amstrad	48,920
	Roland In Time	Amstrad	71 crystals
	Electro-Freddy	Amstrad	2,840

All the pokes fit to print

Paul Lucas from Potters Bar has some handy pokes for the C64 and Spectrum.

C64 — Poke 650,128 turns on auto key repeat and Poke 808,251 stops run stop-restore keys.

Spectrum — Poke 26562,xx can be any number from 1 to 255 for auto repeat fast and slow. Poke 23658,8 makes all letters appear as capitals. 23658,0 returns them to normal case.

Zara Gregg of London has some advice for anyone seeking infinite lives on Booty "Run the tape and when you see the title on top of the screen press stop on tape and press break. Then type in this program."

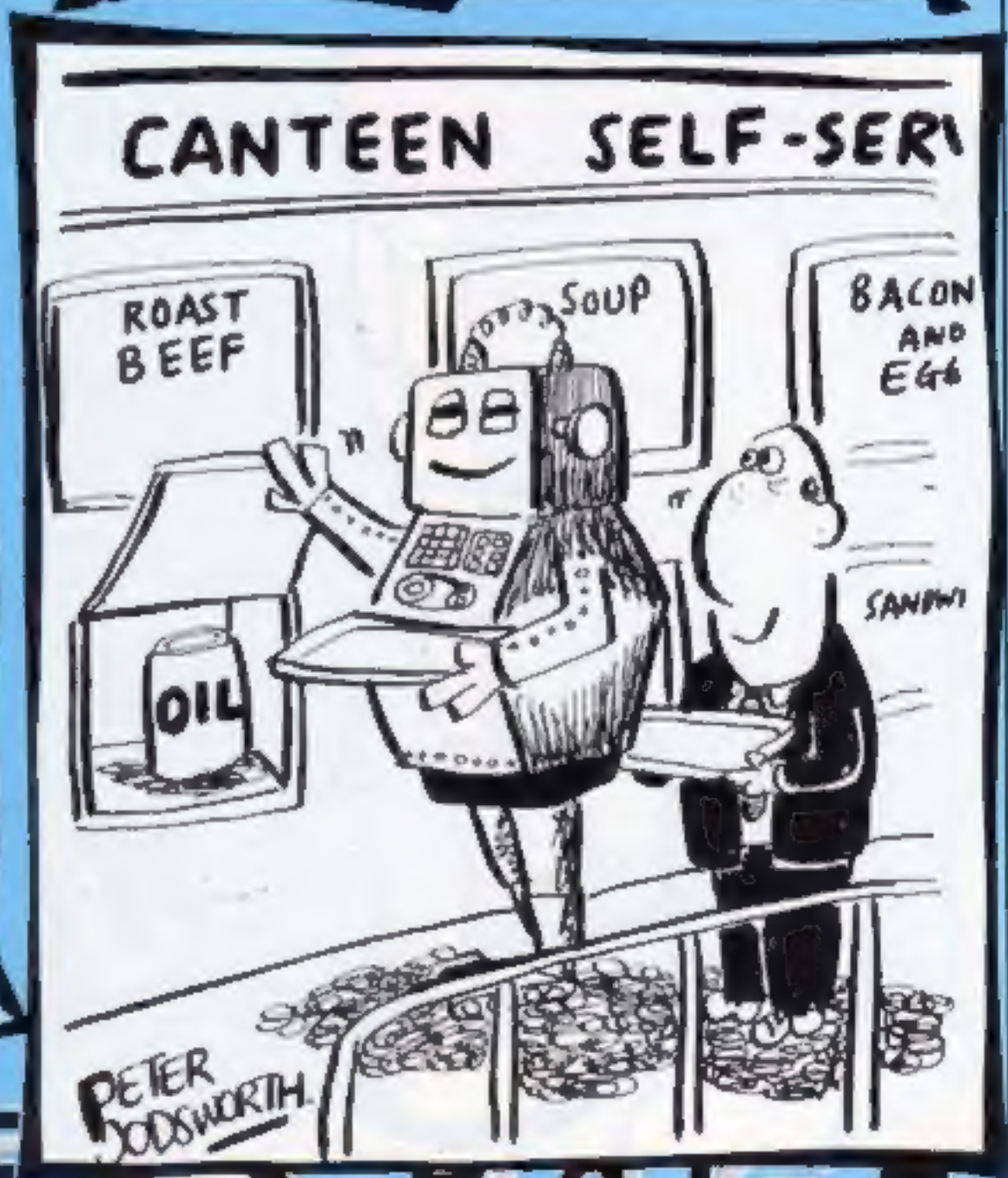
```
10 BORDER 0:PAPER0:INK0
20 CLEAR 26870
30 LOAD""SCREEN$
40 LOAD""CODE26880
50 RANDOMIZE USR 26880
60 POKE 58294,0
70 RANDOMIZE USR 52500
```

This is a small program to give infinite lives for Alien 8 on the Amstrad CPC464, from A Oxley of Billingham, Cleveland.

```
10 openout "d
20 memory &10ff
30 load "",&1100
40 for i = 1 to 7
50 read addr$,byte$
60 poke val("&" + addr$),val
   ("&",byte$)
70 next i
80 data 1101,0,1102,0,1103,0,
   1128,c9,113e,31,113f,ff,
   1140,bf
90 call &1100
100 load "",&2000
110 poke &418e,0
120 call &113e
```

Derby Distance

How far according to the strange logic of this signpost, is it to Derby?



READERS PAGE

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